EXHIBIT 8

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re *Ex Parte* Reexamination of:	)	
	)	
U. S. Patent No. 8,878,949	)	Control No.: *To be assigned*
	)	
Issue Date: Nov. 4, 2014	)	Group Art Unit: *To be assigned*
	)	
Inventor: Timothy R. Pryor	)	Examiner: *To be assigned*
	)	
Appl. No. 13/961,452	)	Confirmation No.: *To be assigned*
	)	
Filing Date: Aug. 7, 2013	)	
	)	
For: CAMERA BASED INTERACTION AND INSTRUCTION	)	
	)	

Mail Stop *Ex Parte* Reexam
Attn: Central Reexamination Unit
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Commissioner:

REQUEST FOR *EX PARTE* REEXAMINATION OF U.S. PATENT NO. 8,878,949

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I. Introduction

An *ex parte* reexamination is requested on claims 1-18 ("the challenged claims") of U.S. Patent No. 8,878,949 that issued on Nov. 4, 2014 to Pryor ("the '949 patent," Ex. PAT-A), for which the U.S. Patent and Trademark Office ("Office") files identify Gesture Technology Partners, LLC ("GTP") as the assignee. In accordance with 37 C.F.R. § 1.510(b)(6), Requester Samsung Electronics Co., Ltd. ("Requester") hereby certifies that the statutory estoppel provisions of 35 U.S.C. § 315(e)(1) and 35 U.S.C. § 325(e)(1) do not prohibit it from filing this *ex parte* reexamination request.

This request raises substantial new questions of patentability based on prior art that the Office did not have before it or did not fully consider during the prosecution of the '949 patent, and which discloses the features recited in the challenged claims.[1] The Office should find the claims unpatentable over this art.

On February 4, 2021, Patent Owner ("PO") initiated a litigation campaign asserting, *inter alia*, infringement of the '949 patent against five defendants across two different venues in *Gesture Technology Partners, LLC v. Huawei Device Co., Ltd.*, Case No. 2-21-cv-00040 (EDTX), *Gesture Technology Partners, LLC* v. Samsung Electronics Co., Ltd., Case No. 2-21-cv-00041 (EDTX), *Gesture Technology Partners, LLC v. Apple Inc.*, Case No. 6-21-cv-00121 (WDTX), *Gesture Technology Partners, LLC v. Lenovo Group Ltd.*, Case No. 6-21-cv-00122 (WDTX), and *Gesture Technology Partners, LLC v. LG Electronics, Inc.*, Case No. 6-21-cv-00123 (WDTX). The *LG* case was transferred to *Gesture Technology Partners, LLC v. LG Electronics Inc.*, Case No. 2-21-cv-19234 (DNJ). Requester respectfully urges that this Request be granted and that reexamination be conducted with "special dispatch" pursuant to 35 U.S.C. § 305.

In accordance with 37 C.F.R. § 1.20(c), the fee for *ex parte* reexamination (non-streamlined) is submitted herewith. If this fee is missing or defective, please charge the fee as well as any additional fees that may be required to Deposit Account No. 50-2613.

[1] At the time of filing of this Request, there are two pending *inter partes* reviews, *Apple Inc. v. Gesture Technology Partners, LLC*, IPR2021-00921 (filed June 2, 2021), and *LG Electronics, Inc. et al. v. Gesture Technology Partners, LLC*, IPR2022-00092 (filed November 5, 2021), challenging all claims of the '949 patent based on prior art not presented in this Request.

II. Identification of Claims and Citation of Prior Art Presented

Requester respectfully requests reexamination of claims 1-18 of the '949 patent in view of the following prior art references, which are also listed on the attached PTO Form SB/08 (Ex. PA-SB08).

Ex. PA-1	U.S. Patent No. 6,115,482 to Sears ("*Sears*")
Ex. PA-12	U.S. Patent No. 6,198,485 to Mack ("*Mack*")

A copy of each of the above-listed references is attached to this request pursuant to 37 C.F.R. § 1.510(b)(3). A copy of the '949 patent is also attached to this request as Exhibit PAT-A pursuant to 37 C.F.R. § 1.510(b)(4).

III. Overview of the '949 Patent

A. Specification and Drawings of the '949 Patent

The '949 patent describes a camera that is configured to automatically take a picture when a person makes a gesture. (Ex. PAT-A.) "[A] silent command to take a picture," such as "raising one's right hand," causes the camera to "automatically 'shoot' pictures." (*Id.*, 5:30-49.) When the system recognizes "certain poses of objects, sequences of poses, motions of objects, or any other states or relationships of objects," the system takes a picture. (*Id.*, 1:63-66.)

Figure 2A (reproduced below) provides an illustration of the camera system. In Figure 2A, camera system 201 comprises "3 cameras and associated image scanning chips." (*Id.*, 4:60-5:1.) The central camera, 202, is for "picture taking," while the two cameras on either side, 210 and 211, are used to see "object positions or special datum positions on objects." (*Id.*, 5:1-7.) Computer 220 processes the data from cameras 210 and 211 to "get various position and/or orientation data concerning a person (or other object, or persons plural, etc)." (*Id.*, 5:24-27.) "[W]hen a subject undertakes a particular signal comprising a position or gesture," a picture is taken. (*Id.*, 4:66-5:49.)

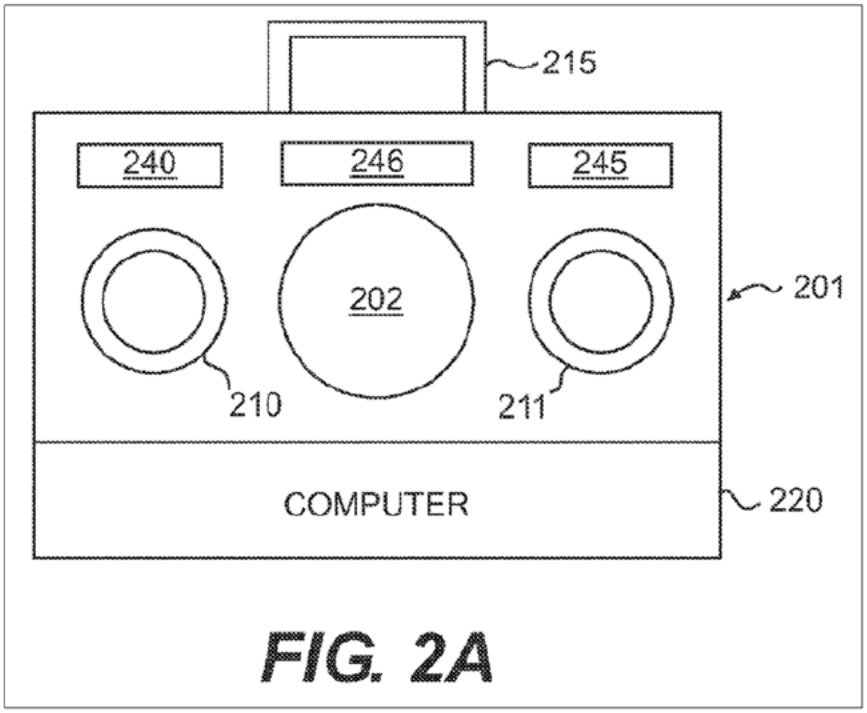


FIG. 2A

(*Id.*, FIG. 2A.)

Figure 2C provides another illustration of the picture taking system. (*Id.*, 6:23-43.) Similar to Figure 2A, camera system 201 has a central camera and two auxiliary cameras. (*See id.*, FIG. 2C, 6:23-43.)

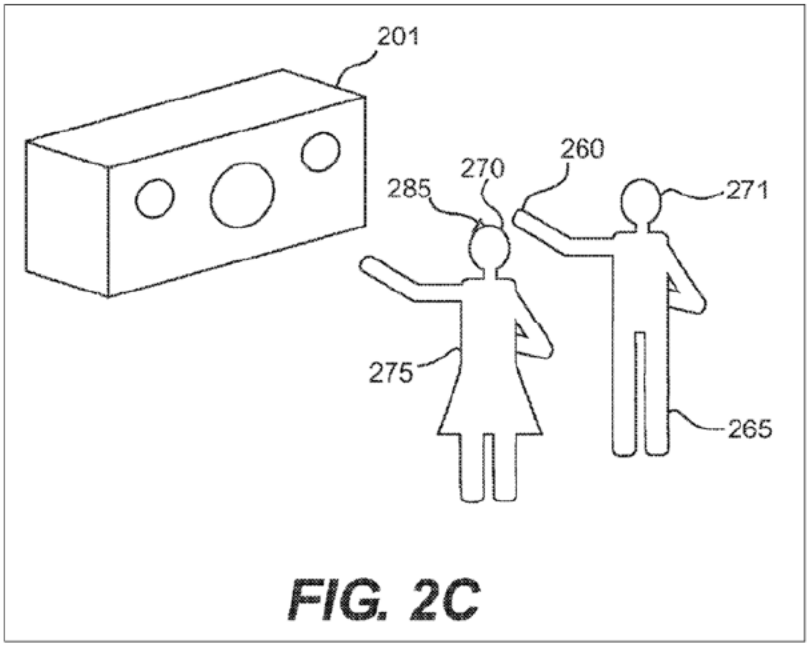


FIG. 2C

(*Id.*, FIG. 2C (annotated).)

The '949 patent asserts that the alleged invention did not occur in isolation. (*Id.*, 1:15-46.) As explained, systems that obtained pictures when specific variables in a picture were detected were known before the date of invention. (*Id.*, 1:23-43.) In one example, a system processed a digital camera image to search for a certain waveform. (*Id.*, 1:31-35.) When the waveform was observed, an image was stored. (*Id.*) In another example, a camera system analyzed an image to determine "facial content and thus the age of the subject." (*Id.*, 1:36-43.) The disclosure specifically alluded to a "point and shoot capability" based on the age classification of individuals whose picture was desired. (*Id.*)

The '949 patent also explains that software programs were available before the time of invention to analyze pose and position data. For example, "known machine vision techniques" were available to determine when a point on a person (such as a hand) was within a certain distance of another person or object. (*Id.*, 6:23-33.) The patent also explains that "software from Integral Vision Corp." could have been used for "pose analysis software or hardware." (*Id.*, 6:6-9.) And such machine vision processing software would "easily recogniz[e]" user positions and movements under uniform background conditions. (*Id.*, 6:63-7:10.) Indeed, "modern image processing techniques" of the time could allow position and orientation data to be generated. (*Id.*, 3:44-48.)

Further, the hardware required to process image data was well known before the time of the alleged invention. For example, the '949 patent discloses using an "Intel Pentium 2" processor to analyze processed image data. (*Id.*, 6:6-14.) The patent also notes that video cameras of the time were "increasingly able to take still photographs" and that cameras used CCD and other matrix arrays to "take pictures of humans and other objects." (*Id.*, 1:15-23.) In applying known machine vision techniques to preexisting camera hardware, the '949 patent purports to "solve[] many famous problems of picture taking." (*Id.*, 12:5-11.)

B. Claims of the '949 Patent

The '949 patent includes eighteen claims total. (*Id.*, 15:20-16:51.) The independent claims of the patent recite devices or methods that determine or detect a gesture and, based on the gesture, capture a picture. (*Id.*) For example, independent claim 1 recites, among other features, a processing unit that is configured to "determine a gesture has been performed in the electro-optical sensor field of view based on the electro-optical sensor output, and control the digital camera in response to the gesture performed in the electro-optical sensor field of view, wherein the gesture

corresponds to an image capture command." (*Id.*, 15:20-38.) Similarly, independent claim 8 recites a method for "determining, using a processing unit, a gesture has been performed in [an] electro-optical sensor field of view based on the electro-optical sensor output, wherein the determined gesture corresponds to an image capture command; and capturing an image to the digital camera in response to the determined gesture corresponding to the image capture command." (*Id.*, 16:1-13.) The third and last independent claim, claim 13, similarly recites an image capture device with a processing unit that is adapted to "detect a gesture has been performed in the electro-optical sensor field of view based on an output of the electro-optical sensor, and correlate the gesture detected by the sensor with an image capture function and subsequently capture an image using the digital camera, wherein the detected gesture is identified by the processing unit apart from a plurality of gestures." (*Id.*, 16:23-39.)

The dependent claims of the '949 patent specify various types of gestures (e.g., a "hand motion"), a light source, resolutions of the cameras, and types of camera sensors. (*Id.*, 15:39-51, 16:13-22, 16:40-51.).

C. Patent Prosecution History of the '949 Patent

The originally filed claims were amended to include additional structural limitations to overcome the art made of record. (Ex. PAT-B.) Specifically, during prosecution, the Patent Examiner cited prior art that monitored actor movements to reject the originally filed claims. (*Id.*, 135-44.) In addressing claim 1, the Examiner reasoned that the prior art disclosed a "processing unit [] adapted to control the digital camera in response to a gesture" as claimed because the prior art cameras were controlled to track an actor as she moved across a set, i.e., in response the gestures of the actor. (*See id.*, 140-41.) For similar reasons, the Examiner noted that the automatic camera control prior art disclosed "determining . . . a gesture performed in the digital camera field of view; and captur[ed] an image to the digital camera in response to the determined gesture corresponding to the image capture command" as originally recited in claim 9; the prior art system correlated a detected gesture "with an image capture function and subsequently capture[d] and image using the digital camera" as originally recited in claim 15. (*Id.*, 140-42.) Thereafter, the independent claims were amended 1) to include additional structure for "device housing" and portable device limitations and 2) to use an "electro-optical sensor" to detect/determine gestures have been performed. (*Id.*, 210-213.) The Patent Examiner, considering the prior art made of record, did not

see a portable device/device housing that used sensors to detect/determine gestures as amended. (*Id.*, 254-60.) Thereafter, the '949 patent issued. (*Id.*)

The references forming the substantial new questions of patentability ("SNQ")—*Sears* and *Mack*—were not cited or considered during prosecution of the '949 patent. (Ex. PAT-A, Cover; Ex. PAT-B.) Likewise, the references were not cited and will not be considered in the pending IPRs. *Apple Inc. v. Gesture Technology Partners, LLC*, IPR2021-00921 (filed June 2, 2021); *LG Electronics, Inc. et al. v. Gesture Technology Partners, LLC*, IPR2022-00092 (filed November 5, 2021).

D. Effective Priority Date of Claims 1-18 of the '949 Patent

For purposes of this reexamination only, Requester assumes that claims 1-18 are entitled to the filing date of Provisional Application No. 60/133,671 identified on the cover of the '949 patent, which is May 11, 1999. (Ex. PAT-A, Cover.)

Sears issued on September 5, 2000 from Application No. 09/176,999 filed October 22, 1998; *Mack* issued on March 6, 2001 from Application No. 09/123,965 filed July 29, 1998. Thus, *Sears* and *Mack* qualify as prior art at least under pre-AIA 35 U.S.C. § 102(e).

IV. Claim Construction

In a reexamination proceeding involving claims of an expired patent, claim construction pursuant to the principle set forth by the court in *Phillips v. AWH Corp.*, 415 F.3d 1303, 1316 should be applied "since the expired claim[s] are not subject to amendment." MPEP § 2258 I.(G) (citing *Ex parte Papst-Motoren*, 1 U.S.P.Q.2.d 1655 (Bd. Pat. App. & Inter. 1986)). The '949 patent, which lists May 11, 2000 as the date of the earliest related continuation and does not list any term extensions or adjustments, has expired. (*See* Ex. PAT-A, Cover.) Therefore, the claim interpretations submitted or implied herein for the purpose of this reexamination adhere to the *Phillips* standard. *See In re CSB-System Int'l, Inc.*, 832 F.3d 1335, 1340-42 (Fed. Cir. 2016).[2]

[2] Requester reserves all rights to raise claim constructions and other arguments in other venues. For example, Requester has not necessarily raised all challenges to the '949 patent in this proceeding, including those under 35 U.S.C. § 112, given the limitations placed by the Rules governing this proceeding. For example, Requester has alleged some terms are indefinite in district court proceedings. But given how closely the prior art maps to the claims (as explained below), those issues do not need to be resolved to assess patentability in this proceeding. In addition, a comparison of the claims to any accused products in litigation may raise controversies that need to be resolved through claim construction that are not presented here given the

The district court in the related Eastern District of Texas cases recently construed/considered several terms recited in the claims of the '949 patent under the *Phillips* standard. (Ex. CC-2.) A summary of the district court constructions/interpretations and the constructions advanced by the parties in the litigation is listed in the following table.

'949 Patent Terms	E.D. Texas Construction	Construction Advanced by Defendant(s)	Construction Advanced by PO
"gesture" of claims 1-3, 8-10, 13-15	"movement of hands or other body parts that conveys meaning" (Ex. CC-2, 54-57)	"a sequence of positions that conveys a meaning" (Ex. CC-2, 54-57)	no construction necessary (Ex. CC-2, 54-57)
"adapted to" of claims 1 and 13	plain meaning (Ex. CC-2, 57-60)	processing unit: "programmed to"; sensor and digital camera: "designed to" (Ex. CC-2, 57-60)	no construction necessary (Ex. CC-2, 57-60)
"forward facing portion" of claims 1, 8, and 13	plain meaning (Ex. CC-2, 71-73)	indefinite (Ex. CC-2, 71-73)[3]	no construction necessary (Ex. CC-2, 71-73)
"forward facing light source" of claims 5 and 16	plain meaning (Ex. CC-2, 73-74)	indefinite (Ex. CC-2, 73-74)[4]	no construction necessary (Ex. CC-2, 73-74)

similarities between the references and the '949 patent. Thus, the SNQs presented herein should not be interpreted to (and do not) conflict with Requester's indefiniteness positions in other proceedings regarding the '949 patent (and how the Court ruled on such positions) (Ex. CC-2.).

[3] While the district court declined to find this term indefinite, Requester does not concede the claim is definite by demonstrating how the prior art discloses/suggests this limitation below. Instead, as noted, Requester presents how a substantial new question of patentability is raised by the prior art where the term is interpreted under the district court's (and PO's) plain meaning interpretation of the claimed term.

[4] While the district court declined to find this term indefinite, Requester does not concede the claim is definite by demonstrating how the prior art discloses/suggests this limitation below. Instead, as noted, Requester presents how a substantial new question of patentability is raised by the prior art where the term is interpreted under the district court's (and PO's) plain meaning interpretation of the claimed term.

'949 Patent Terms	E.D. Texas Construction	Construction Advanced by Defendant(s)	Construction Advanced by PO
"the detected gesture is identified by the processing unit apart from a plurality of gestures" of claim 13	plain meaning, where the antecedent basis for the "detected gesture" is the phrase "detect a gesture has been performed" (Ex. CC-2, 74-76)	indefinite (Ex. CC-2, 74-76)[5]	no construction necessary (Ex. CC-2, 74-76)
"the electro-optical sensor" and "the electro-optical sensor field of view" of claim 13	plain meaning, where the antecedent basis for the "the electro-optical sensor field of view" is "a sensor adapted to detect a gesture in the digital camera field of view" (Ex. CC-2, 77-78)	indefinite (Ex. CC-2, 77-78)[6]	no construction necessary (Ex. CC-2, 77-78)
"a processing unit within the device housing and operatively coupled to an output of the electro-optical sensor, wherein the processing unit is adapted to: determine a gesture	plain meaning (Ex. CC-2, 79-81)	terms invoke 35 U.S.C. § 112 ¶ 6: function = e.g., "determine a gesture has been performed in the electro-optical sensor output, and control the digital camera in response to the gesture performed in the	no construction necessary and the terms do not invoke 35 U.S.C. § 112 ¶ 6 (Ex. CC-2, 79-81)

[5] While the district court declined to find this term indefinite, Requester does not concede the claim is definite by demonstrating how the prior art discloses/suggests this limitation below. Instead, as noted, Requester presents how a substantial new question of patentability is raised by the prior art where the term is interpreted under the district court's (and PO's) plain meaning interpretation of the claimed term.

[6] While the district court declined to find this term indefinite, Requester does not concede the claim is definite by demonstrating how the prior art discloses/suggests this limitation below. Instead, as noted, Requester presents how a substantial new question of patentability is raised by the prior art where the term is interpreted under the district court's (and PO's) plain meaning interpretation of the claimed term.

'949 Patent Terms	E.D. Texas Construction	Construction Advanced by Defendant(s)	Construction Advanced by PO
has been performed in the electro-optical sensor output, and control the digital camera in response to the gesture performed in the electro-optical sensor field of view, wherein the gesture corresponds to an image capture command, and wherein the image capture command causes the digital camera to store an image to memory as recited in claim 1		electro-optical sensor field of view, wherein the gesture corresponds to an image capture command, and wherein the image capture command causes the digital camera to store an image to memory" and dependent claims asserted by PO add to the function such as determining a gesture that includes a hand motion; structure = indefinite[7] (Ex. CC-2, 79-81)	
"processing unit" as recited in claim 8	plain meaning (Ex. CC-2, 82-83)	terms invoke 35 U.S.C. § 112 ¶ 6: function = e.g., "determining a gesture has been performed in the electro-optical sensor field of view based on the electro-optical sensor output, wherein the determined gesture corresponds to an image capture command" and dependent claims asserted by PO add to the function, such as	no construction necessary and the terms do not invoke 35 U.S.C. § 112 ¶ 6 (Ex. CC-2, 82-83)

[7] While the district court declined to find this term indefinite, Requester does not concede the claim is definite by demonstrating how the prior art discloses/suggests this limitation below. Instead, as noted, Requester presents how a substantial new question of patentability is raised by the prior art where the term is interpreted under the district court's (and PO's) plain meaning interpretation of the claimed term, and also as construed below.

'949 Patent Terms	E.D. Texas Construction	Construction Advanced by Defendant(s)	Construction Advanced by PO
		determining a gesture that includes a hand motion; structure = indefinite[8] (Ex. CC-2, 82-83)	
"processing unit operatively coupled to the sensor and to the digital camera, wherein the processing unit is adapted to: detect a gesture has been performed in the electro-optical sensor field of view based on an output of the electro-optical sensor, and correlate the gesture detected by the sensor with an image capture function and subsequently capture an image using the digital camera, wherein the detected gesture is identified by the processing unit apart from a plurality of gestures"	plain meaning (Ex. CC-2, 84-86)	terms invoke 35 U.S.C. § 112 ¶ 6: function = e.g., "detect a gesture has been performed in the electro-optical sensor field of view based on an output of the electro-optical sensor, and correlate the gesture detected by the sensor with an image capture function and subsequently capture an image using the digital camera, wherein the detected gesture is identified by the processing unit apart from a plurality of gestures" and dependent claims asserted by PO add to the function, such as determining a gesture that includes a hand motion; structure = indefinite[9] (Ex. CC-2, 84-86)	no construction necessary and the terms do not invoke 35 U.S.C. § 112 ¶ 6 (Ex. CC-2, 84-86)

[8] While the district court declined to find this term indefinite, Requester does not concede the claim is definite by demonstrating how the prior art discloses/suggests this limitation below. Instead, as noted, Requester presents how a substantial new question of patentability is raised by the prior art where the term is interpreted under the district court's (and PO's) plain meaning interpretation of the claimed term, and also as construed below.

[9] While the district court declined to find this term indefinite, Requester does not concede the claim is definite by demonstrating how the prior art discloses/suggests this limitation below. Instead, as

'949 Patent Terms	E.D. Texas Construction	Construction Advanced by Defendant(s)	Construction Advanced by PO
as recited in claim 13			
"electro-optical sensor" of claims 1, 4, 6-8, and 11-13	plain meaning (Ex. CC-2, 86-87)	"a sensor that senses light by measuring changes to an electric field" (Ex. CC-2, 86-87)	no construction necessary (Ex. CC-2, 86-87)

The prior art mappings found in Section V of this Request explain how the claims of the '949 patent are unpatentable under the constructions of the district court as well as the constructions advanced by both PO and the Defendants. Indeed, the claims would be unpatentable under any reasonable construction of the terms given how closely the prior art maps to the claims. More generally, Section V demonstrates how the prior art meets the limitations of the challenged claims under their plain meaning (as adopted by the district court) unless otherwise noted. Specific information regarding disputed terms in the Eastern District of Texas litigation concerning the '949 patent follows.

A. "gesture" of claims 1-3, 8-10, 13-15

Defendants have contended that the claimed "gesture" should be construed to mean "a sequence of positions that conveys a meaning." The '949 patent uses "gesture" to refer to "a sequence of positions that conveys a meaning." The patent describes a gesture as comprising a sequence of positions. (Ex. PAT-A, 6:50-7:10 ("The sequence of frames of this activity (a 'gesture' of sorts by both parties) is recorded, and the speed of approach, the head positions and any other pertinent data determined.").) The patent distinguishes gestures from poses, and only describes "a sequence of poses" as constituting a gesture:

noted, Requester presents how a substantial new question of patentability is raised by the prior art where the term is interpreted under the district court's (and PO's) plain meaning interpretation of the claimed term, and also as construed below.

> In general, one can use the system to automatically "shoot" pictures for example, when any or all of the following occur, as determined by the position and orientation determining system of the camera of the invention:
>
> 1. Subject in a certain pose.
> 2. Subject in a sequence of poses.
> 3. Portion of Subject in a sequence of poses (e.g. gestures).
> 4. Subject or portion(s) in a specific location or orientation.
> 5. Subject in position relative to another object or person.
>
> For example, this could be bride and groom kissing in a wedding, boy with respect to cake on birthday, and sports events sequences of every description (where the camera can even track the object datums in the field and if desired adjust shutter speed based on relative velocity of camera to subject).
>
> 6. Ditto all of above with respect to both persons in certain poses or gesture situations.
> 7. When a subject undertakes a particular signal comprising a position or gesture—i.e. a silent command to take the picture (this could be programmed, for example, to correspond to raising one's right hand).

(*Id*., 5:30-49 (emphasis added); *see also id.* at Claims 3, 10, 15 (emphasis added) (dependent claims requiring that the gesture "***includes*** a pose," not that the gesture ***is*** a pose, consistent with the specification disclosure that a gesture may be a ***sequence*** of poses).) The patent also describes position, movement, and gesture separately, further showing that a gesture is not just a position or movement, but requires more (*i.e.*, a sequence of positions ***that conveys a meaning***). (*Id*., 2:64-13:5 ("This allows one to use a very large format camera in a fixed location (e.g. 5000×5000 pixels) to cover the image of the whole stage via suitable optics, but to only take and store the pixels in a 1000×700 zone of interest ***movement, or positional or gesture*** interest for example, providing a 35 times increase in the frame rate needed today with such large pixel cameras.").) Moreover, during prosecution the examiner noted that when "an object image is a human being, ***his movements are considered as gestures*** since the term 'gesture' is not clearly defined in the claim." (Ex. PAT-B, 186.) Requester demonstrates below in Section V how the prior art addresses this limitation under this interpretation.

PO has contended that the "gesture" limitations do not require construction. (Ex. CC-1, 19.) The district court construed "gesture" to mean "movement of hands or other body parts that conveys meaning." (Ex. CC-2, 54-57.) Requester demonstrates below in Section V how the prior

art addresses this limitation under PO's interpretation, which also reflects the plain meaning interpretation given by the district court's construction order.

B. "adapted to" of claims 1 and 13

Defendants have contended that the claimed processing unit that is "adapted to" operate as claimed should be construed to mean a processing unit that is "programmed to" operate as claimed. The claimed sensor and digital camera that are "adapted to" operate as claimed should be construed to mean that the sensor and digital camera, respectively, are "designed to" operate as claimed. Requester demonstrates below in Section V how the prior art addresses this limitation under this interpretation.

PO has contended that the "adapted to" limitations do not require construction. (Ex. CC-1, 19-20.) Requester demonstrates below in Section V how the prior art addresses this limitation under PO's interpretation, which also reflects the plain meaning interpretation given by the district court's construction order.

C. "processing unit" as recited in claims 1, 8, and 13

PO has argued in district court that the "processing unit" limitations do not require construction and do not invoke §112, ¶ 6. (Ex. CC-1, 27-28.) Under PO's interpretation, Requester likewise demonstrates below in Section V how the prior art addresses the limitations in addition to a plain meaning given by the district court's construction order.

To the extent this limitation is found to be subject to 35 U.S.C. § 112, ¶ 6, Requester proposes the following construction (under the assumption the Office determines appropriate structure is provided in the '949 patent, which Requester does not concede).

Construing a means-plus-function claim term requires that the function recited in the claim term be first identified; then, the written description of the specification must be consulted to identify the corresponding structure that performs the identified function and equivalents thereof. *See Williamson v. Citrix Online, LLC*, 792 F.3d 1339, 1351 (Fed. Cir. 2015); *see also t, Inc. v. Iceberg Indus., LLC*, IPR2013-00551, Paper No. 6 at 15 (Feb. 28, 2014).

For claim 1, the identified function is to "determine a gesture has been performed in the electro-optical sensor output, and control the digital camera in response to the gesture performed in the electro-optical sensor field of view, wherein the gesture corresponds to an image capture command, and wherein the image capture command causes the digital camera to store an image to

memory." The dependent claims add other functions, including determining various gestures, such as a hand motion (claim 2).

For claim 8, the identified function is "determining . . . a gesture has been performed in the electro-optical sensor field of view based on the electro-optical sensor output, wherein the determined gesture corresponds to an image capture command." The dependent claims add other functions, including determining various gestures such as a hand motion (claim 9).

For claim 13, the identified function is to "detect a gesture has been performed in the electro-optical sensor field of view based on an output of the electro-optical sensor, and correlate the gesture detected by the sensor with an image capture function and subsequently capture an image using the digital camera, wherein the detected gesture is identified by the processing unit apart from a plurality of gestures." The dependent claims add other functions, including determining various gestures, such as a hand motion (claim 14).

A structure disclosed in the specification qualifies as corresponding structure only if it is clearly linked by the patent's specification (or possibly the prosecution history) to performing the claimed function. *See Default Proof Credit Card Sys., Inc. v. Home Depot U.S.A., Inc.*, 412 F.3d 1291, 1298 (Fed. Cir. 2005). Where a means-plus-function term is directed to software, the specification must "disclose an algorithm for performing the claimed function." *Williamson*, 792 F.3d at 1352. For purposes of this proceeding only, Requester interprets the corresponding structure of the above-identified functions as software running on a processor configured to perform the identified function or equivalents thereof given the lack of relevant disclosure in the '949 patent specification (*see also supra* footnote 2).

Requester demonstrates below in Section V how the prior art addresses this limitation under this interpretation.

D. "electro-optical sensor" of claims 1, 4, 6-8, and 11-13

Defendants have contended that claimed "electro-optical sensor" should be construed to mean "a sensor that senses light by measuring changes to an electric field." Accordingly, Requester also includes a separate explanation below in Section V for how the prior art addresses this construction (which also consistent with the plain and ordinary meaning). PO has contended that the "electro-optical sensor" limitations do not require construction. (Ex. CC-1, 30.) Requester likewise demonstrates below in Section V how the prior art addresses this limitation under PO's

interpretation, which also reflects the plain meaning given by the district court's construction order.

V. Statement of Substantial New Questions of Patentability

As mentioned above, *Sears* and *Mack* were never made of record or considered by the Office during original prosecution of the '949 patent. However, the references (as discussed below) disclose or suggest all of the features of claims 1-18.

SNQ1: *Sears* raises a substantial new question of patentability (SNQ1) with respect to claims 1-18 of the '949 patent.

SNQ2: *Sears* and *Mack* raise a substantial new question of patentability (SNQ2) with respect to claim 11 of the '949 patent.

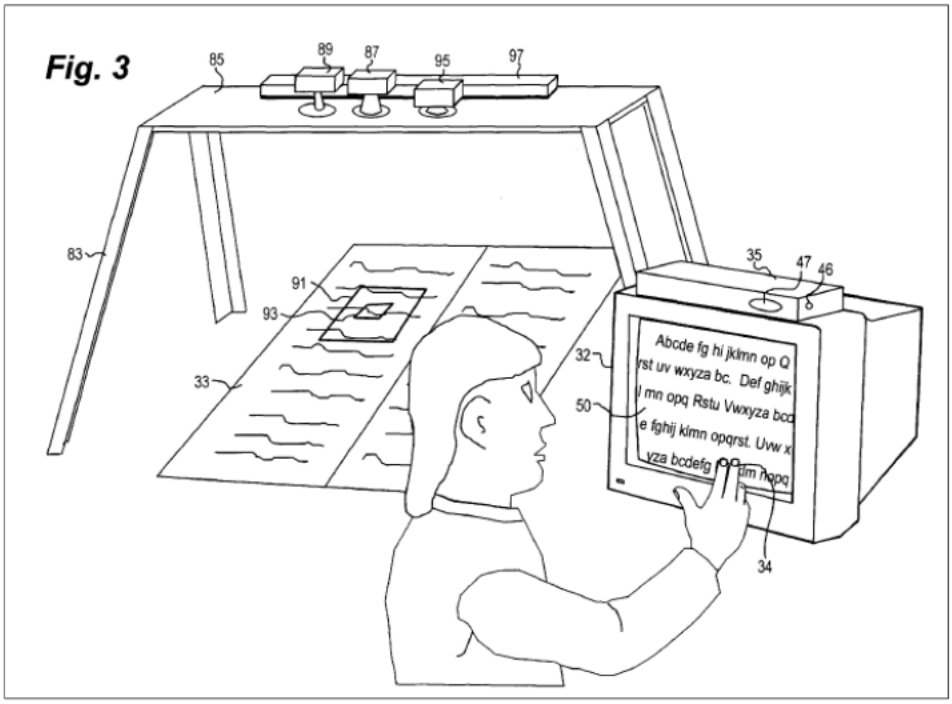
Thus, for these reasons and the reasons discussed below and in the accompanying declaration of Dr. Gregory D. Abowd (Ex. PA-DEC), *Sears* raises a substantial new question of patentability (SNQ1) with respect to claims 1-18 of the '949 patent; *Sears* and *Mack* raise a substantial new question of patentability (SNQ2) with respect to claim 11 of the '949 patent.

A. SNQ1: *Sears*

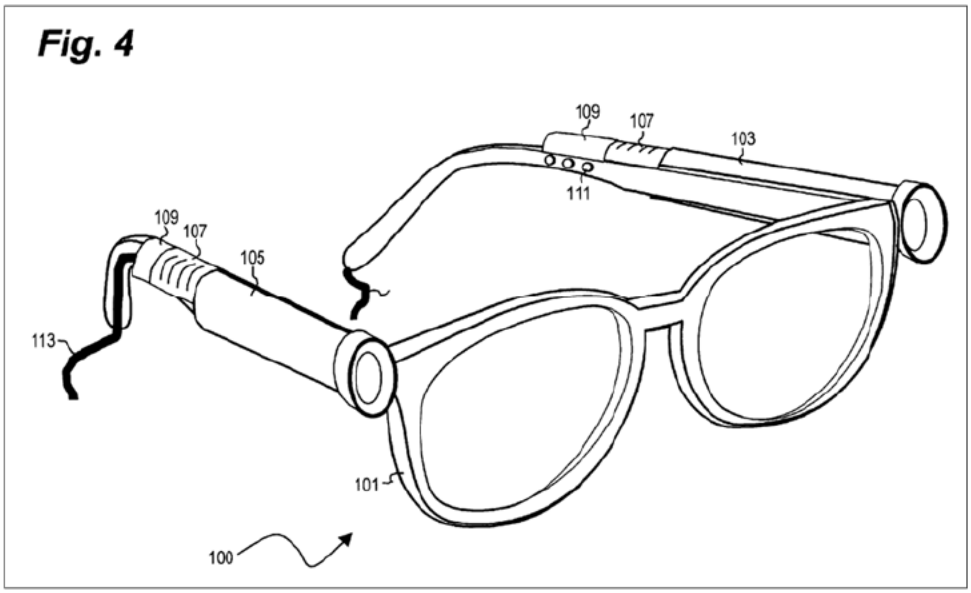
As explained below and in the attached declaration of Dr. Abowd (Ex. PA-DEC), *Sears* discloses or suggests the limitations of claims 1-18 of the '949 patent. (Ex. PA-DEC, ¶ 54.)

1. Overview of *Sears*

Sears discloses various reading machines that are controlled with natural "hand gestures." (Ex. PA-1, Abstract.) For example, Figures 3 and 4 of *Sears* detail embodiments of portable reading machines. (*Id.*, 20:67-21:16 (discussing a "portable" version of the reading machine depicted in Figure 3); *id.*, (describing an example of a worn reading machine depicted in Figure 4); *id.*, FIG. 3-4.)



(*Id.*, FIG. 3.)



(*Id.*, FIG. 4.)

In the *Sears* reading machines, a first camera senses user "gestures." (*Id.*, FIGs. 3-4, 16:14-18, 21:11-13.) In Figure 3, for example, camera 87 of the reading machine is configured to detect the gestures of a user. (*Id.*, 16:14-18 ("A low-magnification wide-angle FOV camera 87 is used to track command gestures.").) Camera 103 performs a similar function in Figure 4. (*Id.*, 21:11-13 ("A wide-field camera 103 on one eyeglass earpiece provides functionality similar to that of

the wide-field camera 87 of FIG. 3.").) For example, "[o]ne or more fingers moving back and forth would constitute a clear command, stopping any current reading." (*Id.*, 10:39-48.)

The reading machines disclosed by *Sears* also include a second camera that is configured to take images of text. (*Id.*, FIGs. 3-4, 16:41-44, 21:13-15.) In Figure 3, camera 89 has an imaging sensor with a pixel density that "allows for accurate optical character recognition in the field of view" of the camera. (*Id.*, 16:41-44.) In Figure 4, "a narrower field camera 105 provides functionality similar to that of the pan-tilt camera 89." (*Id.*, 21:13-15.) A main system computer analyzes images of text when a user performs a hand gesture in front of a reading machine. (*Id.*, 18:9-38.) The main system, after detecting a predetermined user gesture, can control the system to read text to a user during a speech synthesis operation. (*Id.*; *id.*, FIG. 2, Speech Synthesis 63.)

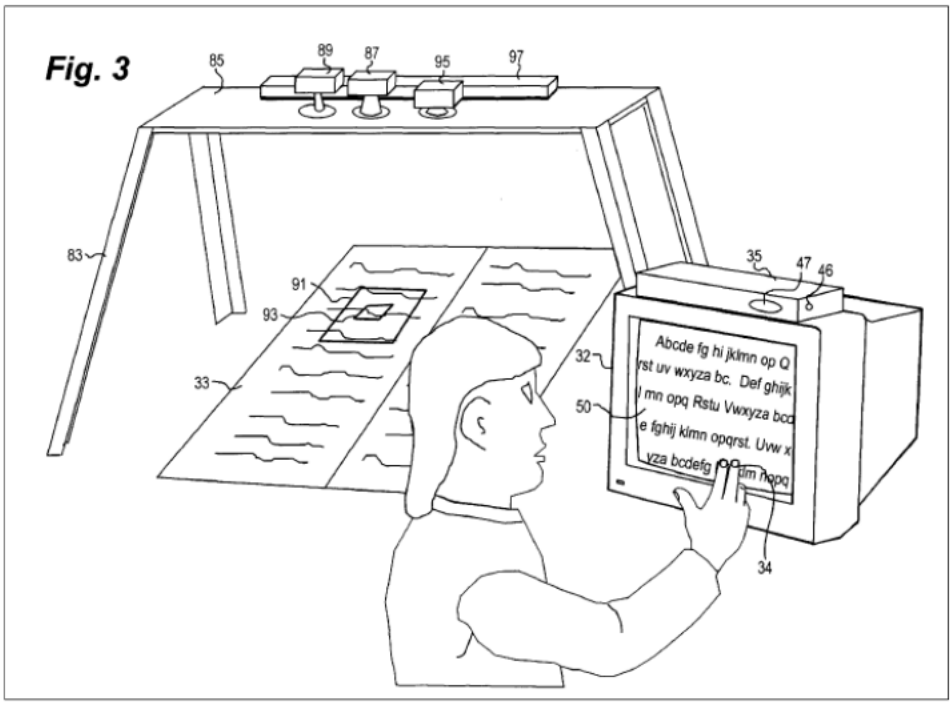
More generally, *Sears* discloses portable gesture detecting devices and is in the same or similar technical field as the '949 patent. (*Id.*, Abstract, FIGs. 3-4; Ex. PAT-A, 1:5-10 ("[S]tereo photogrammetry is combined with digital image acquisition to acquire or store scenes and poses of interest, and/or to interact with the subject in order to provide data to or from a computer."); Ex. PA-DEC, ¶ 50.) To the extent *Sears* is not in the field of endeavor of '949 patent (it is), *Sears* is reasonably pertinent to problems associated with controlling devices according to user gestures, problems with which the inventor was involved. (Ex. PA-1, FIGs. 3 and 4; Ex. PAT-A, 11:17-24; Ex. PA-DEC, ¶ 50.) It is also pertinent to problems associated with controlling cameras based on user gestures. (Ex. PA-1, 18:33-38, 15:54-56; Ex. PAT-A, 1:15-46; Ex. PA-DEC, ¶ 50.)

2. Claim 1

a. [1.a] A portable device comprising:

To the extent the preamble is limiting, *Sears* discloses this limitation. (Ex. PA-DEC, ¶ 55.) For example, ***Sears* discloses that the reading machine disclosed in Figure 3 may be implemented as a "portable version"** ("portable device"). (Ex. PA-1, 20:67-21:7, 16:14-15, FIG. 3.) Specifically, the reading machine includes legs 83, which support a platform 85, wherein the platform is positioned above printed material 33 to be read. (*Id.*, 16:14-16.) The reading machine also includes two cameras 87 and 89, a laser scanning mechanism 95, and a wide-field illuminator 97. (*Id.*, 16:16-17:27.) *Sears* explains that in the "portable version" of the reading machine, platform 85 "may be supported on collapsible or hinged legs, or may even be available in forms without leg supports, and be worn by the user." (*Id.*, 20:67-21:7.) Moreover, "the

cameras, illuminators and scanners, or some subset of these, may be worn on a head-mount, such as on a pair of glasses, telephone headset, headphones, or cap" in the portable version. (*Id.*) *See In re Lindberg*, 194 F.2d 732 (C.C.P.A. 1952) (determining that a portability requirement is not sufficient by itself to patentably distinguish over an otherwise old device unless there are new or unexpected results).



(Ex. PA-1, FIG. 3.)

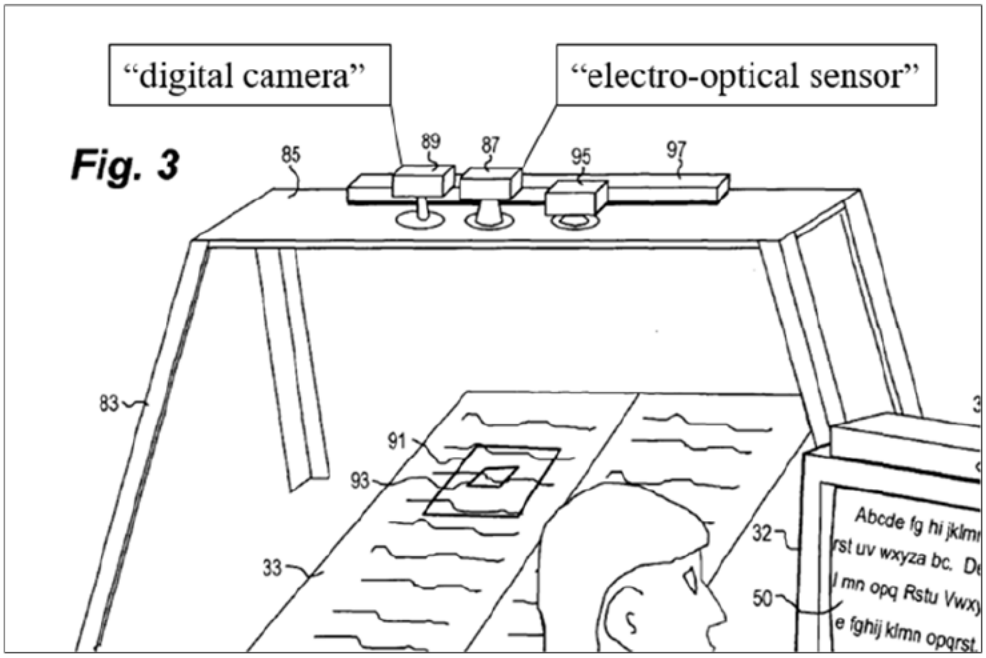
Sears discloses that the reading machine includes two cameras. (*Id.*, 16:14-44.) The first camera is a low-magnification wide-angle FOV camera 87 that is used to "track command gestures." (*Id.*, 16:14-30.) The second camera is a pan-tilt camera 89, which is used to perform optical character recognition (OCR). (*Id.*, 16:41-44.) Although camera 89 has a "smaller FOV than the wide-angle camera 87," it has a higher pixel density that "allows for accurate optical character recognition of text in the field of view." (*Id.*; *see also id.*, 7:23-24; Ex. PA-DEC, ¶ 56.) Accordingly, *Sears*'s reading machine (e.g., components 87, 89, 35 shown in FIG. 3) is a "portable device" as claimed. (*See also* analysis and discussions below regarding limitations [1.b]-[1.e].)

b. [1.b] a device housing including a forward facing portion, the forward facing portion of the device housing encompassing an

electro-optical sensor having a field of view and including a digital camera separate from the electro-optical sensor; and

Sears discloses this limitation. (Ex. PA-DEC, ¶ 57.) For example, *Sears* discloses (with reference to Figure 3) components of the reading machine, including wide-angle FOV camera 87 ("electro-optical sensor having a field of view") and small FOV camera 89 ("digital camera separate from the electro-optical sensor"), are "**placed within a common housing**" ("device housing"). (Ex. PA-1, 18:15-18; *see also id.*, 16:15-33, FIG. 3; Ex. PA-DEC, ¶ 58.) A person of ordinary skill in the art ("POSITA") would have understood camera 87 to disclose an "electro-optical sensor" at least because camera 87 tracks gestures, Ex. PA-1, 16:16-19, and the gesture-sensing camera converts light to "low resolution" images (i.e., converts light to electronic data), *id.*, 18:43-45, 27:39-40. (Ex. PA-DEC, ¶ 58.) Further, *Sears* satisfies Requester's construction of the claimed "electro-optical sensor," "a sensor that senses light by measuring changes to an electric field," at least because camera 87 senses light by measuring electric field changes of sensing signals. (Ex. PA-DEC, ¶ 58 (explaining that an electronic camera sensor converts light to various electronic signals and samples/measures the electronic signals to capture an image); Ex. PA-8, 2:41-42 ("The basic digital camera works by a process of sampling pixels and measuring voltage levels."); Ex. PA-14, 1:12-20 ("Solid state image sensors include a linear or matrix array of photosensitive elements which convert a light image incident upon the photosensitive elements into a video signal corresponding to the light signal. A typical solid state image sensor is a full frame CCD image sensor. The sensor is exposed to a light image and converts the light intensity to a charge distribution accumulated by the photosensitive array. At the end of the exposure period, the charge accumulated by the photosensitive array is serially read out from the sensor . . . .").) Accordingly, *Sears* discloses or suggests this limitation under both the Requester's proposed constructions, and the plain meaning proposed by PO and found by the district court for the claimed "electro-optical sensor." (*See* Section IV.)

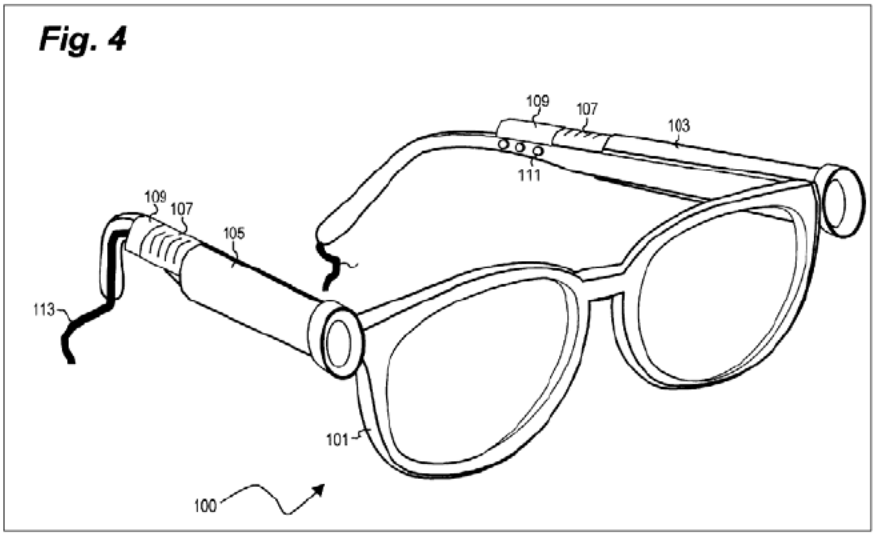
Furthermore, a POSITA would have understood camera 89 to refer to a "digital camera." (Ex. PA-1, 16:41-44 (explaining that camera 89 has a "pixel" density for recognizing text); *id.*, 17:14 (disclosing "high-resolution camera 89"); *see also id.,* 4:1-5 (explaining that the reading method includes processing a "digital image" to sense text); *id.*, 7:24-45, 14:56-15:34, 18:25-44 (discussing various pixel and resolution considerations for processing text); Ex. PA-DEC, ¶ 59.)



(Ex. PA-1, FIG. 3 (annotated).)

As shown in Figure 3, both cameras 87 and 89 point in the same direction, one performing OCR of printed material 33 and the other detecting gestures made on top of the printed material 33 to indicate which text should be read. (Ex. PA-1, FIG. 3; *see also id.*, 17:18-28 (disclosing that the text is illuminated by a light source "to provide light that is incident on the widest physical range accessible by **both** the wide-field and pan-tilt cameras 87 and 89.").) As such, a POSITA would have understood that cameras 87 and 89 in *Sears* are in a forward facing portion of the device housing. (Ex. PA-DEC, ¶ 60.)

To the extent that *Sears* does not explicitly disclose placing cameras 87 and 89 in a forward facing portion of the device housing when they are incorporated in the same housing, a POSITA would have found such an arrangement obvious in view of the disclosures of *Sears* or the state of the art. (Ex. PA-DEC, ¶ 61.) In Figure 4, *Sears* discloses an embodiment wherein both cameras 103 and 105 (similar to cameras 87 and 89) are encompassed in the forward facing portion of the eyeglasses. (Ex. PA-1, 21:7-15 ("An eyeglass frame 101 provides the basic platform for the reading machine. A wide-field camera 103 on one eyeglass earpiece provides functionality similar to that of the wide-field camera 87 of FIG. 3, and a narrower field camera 105 provides functionality similar to that of the pan-tilt camera 89.").) Further, *Sears* also describes that the portable version (and corresponding cameras) faces forward to perform a barcode scan function. (*Id.*, 16:1-10.)



(*Id.*, FIG. 4.) Indeed, portable devices with a forward-facing camera and sensor were well-known in the art. (*See, e.g.*, Ex. PA-2, 22 (disclosing "a conventional laptop computer 70 . . . is provided with two digital cameras 12,14, one being disposed at either corner in the upper region of the screen area 20"); Ex. PA-3, FIG. 6, 5:62-6:52 (disclosing a cell phone housing that includes a camera for detecting hand sign gestures); *id.*, 13:4-28 (disclosing that "[i]t may be desired to utilize more than one camera" where "[e]ach camera is covering a separate angle").)

A POSITA would have been motivated to place cameras 87 and 89 in a forward facing portion of the device housing. (Ex. PA-DEC, ¶ 62.) As discussed above, *Sears*'s core functionality, where one camera performs OCR of printed material 33 and the other detects gestures made on top of the printed material 33 to indicate which text should be read, requires both cameras to face the same direction (namely, at printed material 33). (Ex. PA-DEC, ¶ 62.) As such, a POSITA would have been motivated to maintain this arrangement even when cameras 87 and 89 are placed within the same housing.

A POSITA would have had the capability and a reasonable expectation of success in implementing both cameras in the forward facing portion of the common housing, given that this configuration is suggested by *Sears* and disclosed by other devices known in the art. (Ex. PA-DEC, ¶ 63; Ex. PA-1, FIG. 4; Ex. PA-2, 22 (disclosing "a conventional laptop computer 70 . . . is provided with two digital cameras 12,14, one being disposed at either corner in the upper region of the screen area 20"); Ex. PA-3, FIG. 6, 5:62-6:52 (disclosing a cell phone housing that includes a camera for detecting hand sign gestures); *id.*, 13:4-28 (disclosing that "[i]t may be desired to utilize more than one camera . . . ," where "[e]ach camera is covering a separate angle" and "[a]ngle

overlap may . . . be permitted").) Indeed, such implementation would have combined known prior art elements (e.g., known physical housing and electronic components) according to known methods (e.g., design/manufacturing methods to package components in a common housing) to yield the predictable result of a common housing that includes forward-facing cameras. (Ex. PA-DEC, ¶ 63.) *See KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 416 (2007) ("The combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results."). Further, combining known elements into an integrated device is not innovative. *See In re Larson*, 340 F.2d 965, 968 (C.C.P.A. 1965) ("[T]he use of a one piece construction instead of the structure disclosed in [the prior art] would be merely a matter of obvious engineering choice.").

Accordingly, *Sears* discloses or suggests this limitation under both the Requester's proposed constructions, and the interpretations proposed by PO and found by the district court. (*See* Section IV; EX. CC-2.)

c. [1.c] a processing unit within the device housing and operatively coupled to an output of the electro-optical sensor

Sears discloses "a processing unit . . . operatively coupled to an output of the electro-optical sensor." (Ex. PA-DEC, ¶ 64.) For instance, *Sears* discloses that main system 35 ("processing unit"), which includes a computer, controls cameras 87 and 89 and performs image analysis. (Ex. PA-1, 18:9-13 ("It should be noted that the coordinated action of the cameras 87 and 89, as well as the laser scanner 95 are preferably controlled by the computer located in the main system 35 that is engaged in the analysis of images from the camera."); *id.*, FIG. 3.) A POSITA would have understood that the disclosed computer is "coupled to an output of the electro-optical sensor" at least because it performs image analysis based on images from camera 87. (Ex. PA-1, 18:9-19, FIG. 3; Ex. PA-DEC, ¶ 65.) While *Sears* discloses cameras 87 and 89 are implemented in the common housing (*supra* Section V.A.2.b.), *Sears* does not expressly disclose that the common housing includes the main system 35 ("processing unit"). Nonetheless, a POSITA would have found it obvious to implement the computer in the common housing, as discussed below. (Ex. PA-DEC, ¶ 65.)

For instance, *Sears* itself discloses that main system 35 (which includes the computer) may be placed **on the same platform 85** as cameras 87 and 89. (Ex. PA-1, 18:13-19 (teaching that the cameras and main system 35 can be located on platform 85).) Indeed, *Sears* discloses with

reference to Figure 1 that the reading machine's camera and computer are included in the same housing. (*Id.*, 4:62-5:6 ("The electronic reading machine 29 comprises a main system 35, from which a camera mount 33 protrudes."); *id.*, 5:34-43 ("The image or images obtained by the camera 39 are transmitted to an electronic computing device located within the main system 35. The device may comprise either a general-purpose personal computer, or an embedded computer optimized for use in the reading system.").) In these examples, as a POSITA would have understood, the physical location of main system 35 is nothing more than a predictable design choice. (Ex. PA-DEC, ¶ 66.) Furthermore, the operating principle of the reading machine would not change if the computer was located inside or outside the common housing. (Ex. PA-DEC, ¶ 66.)

Given that *Sears* discloses a "portable version" of the reading machine (Ex. PA-1, 20:67-21:7, 16:14-15, FIG. 3), a POSITA would have been motivated to implement the components of the reading machine in a common housing to enhance the portability of the reading machine (by preventing a user from having to move various separate components, etc.). (Ex. PA-DEC, ¶ 67.) Indeed, a POSITA would have recognized this to be a predictable design choice that was commonly implemented at the time. For example, *Bushnag*[10] teaches a laptop housing that includes a computer processor and two cameras. (Ex. PA-2, FIG. 9; *id.,* 22 (disclosing that laptop computer 70 includes digital cameras 12 and 14).) In another example, *Liebermann*[11] teaches a portable cell phone housing that includes two cameras and associated hardware. (Ex. PA-3, FIG. 6, 5:62-6:10, 13:4-16 (describing a cell phone with two cameras that detects user hand gestures).) Including the cameras and the main system 35 within a common housing would have further increased the portability of the reading machine, a feature that *Sears* explicitly describes as

[10] *Bushnag* (Ex. PA-2) is cited as evidence supporting the knowledge of a POSITA before the time of the alleged invention. *Bushnag* is a publication of a patent application laid "Open to Public Insp[ection]" (i.e., publically accessible as a printed publication) by the Canadian Intellectual Property Office on October 30, 1997. *See eBay v. MoneyCat*, CBM2014-00092, Paper 12 at 12 (P.T.A.B. Sep. 24, 2014) (crediting "Open to Public Insp." date as establishing Canadian laid-open patent application as publicly accessible printed publication) (citing *In re Wyer*, 655 F.2d 221 (C.C.P.A. 1981)); *In re Wyer*, 655 F.2d 221 (C.C.P.A. 1981); *Bruckelmyer v. Ground Heaters, Inc.*, 445 F.3d 1374 (Fed. Cir. 2006) (determining a Canadian patent application was publically accessible and thus a printed publication); *see also* Ex. PA-2, 1 (listing an October 30, 1997 date); Ex. PA-4 (listing the open to public inspection date of the *Bushnag* reference as October 30, 1997). Thus, *Bushnag* qualifies as prior art at least under pre-AIA 35 U.S.C. § 102(b).

[11] *Liebermann* (Ex. PA-3) is cited as evidence supporting the knowledge of a POSITA before the time of the alleged invention.

desirable. (Ex. PA-DEC, ¶ 67; Ex. PA-1, 20:67-21:7 ("A smaller reader would be particularly useful for a portable version of the device.").) In comparison to a reading machine that consists of separate components, a single portable package in a common housing would have been easier to move and operate. (Ex. PA-DEC, ¶ 67.)

A POSITA would have had the capability and a reasonable expectation of success in implementing various components, e.g., cameras and a computer, in a common housing. (Ex. PA-DEC, ¶ 68.) Indeed, including cameras and a computer within a device housing was well within the grasp of a POSITA during the time of invention. (Ex. PA-DEC, ¶ 68; Ex. PA-2, 22 (disclosing with reference to Figure 9 "a conventional laptop computer 70 . . . is provided with two digital cameras 12,14, one being disposed at either corner in the upper region of the screen area 20"); *id.*, 17 (disclosing that specific functions of the system are triggered when the cameras detect specific, unnatural eye gestures); *id.*, 13 ("Figure 9 illustrates an embodiment of the eye-controlled command system used in conjunction with a conventional portable computer."); Ex. PA-3, FIG. 6, 5:62-6:52 (disclosing a cell phone housing that includes a camera and hardware for detecting hand sign gestures); *id.*, 13:4-28 (disclosing that "[i]t may be desired to utilize more than one camera . . . ," where "[e]ach camera is covering a separate angle" and "[a]ngle overlap may . . . be permitted"); Ex. PA-7, FIGs 1, 5 (disclosing a camera housing that includes a control circuit, a camera, and a photo diode sensor).) Implementing the reading machine in a common housing as discussed above would have combined known prior art elements (e.g., known physical housing and electronic components) according to known methods (e.g., packaging components in a housing) to yield the predictable result of a common housing that includes cameras and a computer to enhance portability. (Ex. PA-DEC, ¶ 68.) *See KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 416 (2007) ("The combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results."). Further, combining known elements into an integrated device (e.g., placing a known processing unit in a known device housing) is not innovative. *See In re Larson*, 340 F.2d 965, 968 (C.C.P.A. 1965) ("[T]he use of a one piece construction instead of the structure disclosed in [the prior art] would be merely a matter of obvious engineering choice.").

Accordingly, *Sears* discloses or suggests this limitation under both the Requester's proposed constructions, and the interpretations proposed by PO and found by the district court. (*See* Section IV; EX. CC-2.)

d. [1.d] wherein the processing unit is adapted to: determine a gesture has been performed in the electro-optical sensor field of view based on the electro-optical sensor output, and

Sears discloses this limitation. (Ex. PA-DEC, ¶ 69.) For example, *Sears* discloses that camera 87 ("electro-optical sensor") is used to track various "command gestures." (Ex. PA-1, 16:17-19 (emphasis added) ("**A low-magnification wide-angle FOV camera 87 is used to track command gestures.**"); *id.,* 22:5-8 ("[I]n these embodiments, the camera received commands, at least in part, from hand and finger gestures of the user that were captured by the camera or cameras."); *see also id.*, 5:58-67 (disclosing that the captured image is "analyzed for the presence, orientation and movement of a pointer object (e.g. a finger 34 . . .) which is under the influence of the user and which is located on top of the printed material 33, in a pointer tracking step 57").)[12] For example, *Sears* discloses that:

> the user indicates the text to be read through pointer gestures, that might include presenting his finger 34 in a particular orientation, forming a distinctive shape with two or more fingers 34, waving his finger 34 back and forth, or tapping his finger 34 at a location. During pointer tracking 57, the movements of the pointer are interpreted, and the text that is indicated to be read is determined.

(*Id.*, 6:4-11; *see also id.*, 7:66-8:9, 8:26-9:40 (disclosing with reference to Figure 6 the steps of an alternative method of pointer tracking 57); *id.*, 9:41-64 (disclosing that user selects the textual components to be read by the system by pointing with his hand at the text to be read); *id.*, 9:65-11:14 (disclosing various gestures commands to control the reading process, e.g., "[c]urling the finger up . . . could indicate that a paragraph of text should be skipped.").) Moreover, *Sears* discloses the claimed "gesture" under Requester's construction, "a sequence of positions that conveys a meaning," at least because *Sears* discloses that the hand moving gestures performed convey commands, e.g., to control the reading of the text, as described above. (*See*, *e.g.*, Ex. PA-1, 16:17-19; *id.*, 10:39-65 (describing various hand moving gestures such as a moving double finger gesture); *see also id.*, 6:4-11, 9:41-64, 9:65-10:5, 22:5-8; *id.*, 17:55-58 (emphasis added) ("Once the user's hand or finger is identified . . . , the hand can be tracked until **a command is**

[12] *Sears* discloses with reference to the Figure 3 embodiment that gestures are tracked "using algorithms previously described." (Ex. PA-1, 17:55-58.) Thus, a POSITA would have understood that disclosures associated with gesture determinations disclosed with reference in the preceding embodiments apply to the embodiment associated with Figure 3. (Ex. PA-DEC, ¶ 70 n.3.)

received, either **through hand movement**, finger orientation or position, or other input modality.").)

For similar reasons, *Sears* discloses the claimed "gesture" under the district court's construction discussed above (*supra* Section IV.A), i.e., "movement of hands or other body parts that conveys meaning," at least because *Sears* discloses that the hand moving gestures performed convey commands, e.g., to control the reading of the text. (*See*, *e.g.*, Ex. PA-1, 16:17-19; *id.*, 10:39-65 (describing various hand moving gestures such as a moving double finger gesture); *see also id.*, 6:4-11, 9:41-64, 9:65-10:5, 22:5-8; *id.*, 17:55-58 (emphasis added) ("Once the user's hand or finger is identified . . . , the hand can be tracked until **a command is received**, either **through hand movement**, finger orientation or position, or other input modality.").) The gesture analysis in the following sections of the Request at least include the gestures that fall within the scope of the district court construction.

Accordingly, *Sears* discloses or suggests this limitation under both the Requester's proposed constructions, and the interpretations proposed by PO and found by the district court. (*See* Section IV; EX. CC-2.)

Furthermore, as a POSITA would have understood, *Sears* discloses that the processing unit of 35 determines a gesture is performed in the FOV of camera 87 ("electro-optical sensor") based on data output from the sensor. (Ex. PA-DEC, ¶ 71.) Main system 35 ("processing unit") analyzes gesture images from camera 87 ("the electro-optical sensor output"). (Ex. PA-1, 16:17-19 ("A low-magnification wide-angle FOV camera 87 is used to track command gestures."); *id.*, 18:9-15 (explaining that main system 35 is coupled to the camera 87 and is "engaged in the analysis of images").) Main system 35 determines whether a gesture has been performed based on camera images. (*Id.*, 17:55-58 (describing that gestures are tracked "using algorithms previously described"); *id.*, 5:44-6:10, 6:52-7:2 (explaining that main system 35 analyzes camera images to determine when various "gestures" have been performed).) To perform this function, a POSITA would have understood that a gesture must be detected by camera 87 within its field of view. (Ex. PA-DEC, ¶ 71.) Moreover, such control functions may occur as a result of a single gesture image. (Ex. PA-2, 5:51-58 ("The output digital image, consisting of a two-dimensional array of pixel values (generally either 8-bit gray-scale or 24-bit color) is then sent to a digital computer where the image is analyzed in at least two modes. In the first mode, the image is converted into its text representation in an optical character recognition step 55, whereas in the second mode, the image

is analyzed for the presence, orientation and movement of a pointer object (e.g. a finger 34, shown in FIG. 1)."); *id.*, 18:9-14, 18:25-45, 22:5-8, 17:55-58 (discussing how the computer performs image analysis of gestures and the image capture steps).)

For similar reasons, *Sears* also discloses the claimed "processing unit" is "adapted to" perform the identified function under the construction discussed above. (Ex. PA-DEC, ¶ 72.) For example, *Sears* discloses that main system 35 contains "algorithms" to perform the functions as described above. (*See*, *e.g.*, Ex. PA-1, 16:17-19 (describing that camera 87 tracks gestures); *id.*, 18:9-13 (describing that main system 35 analyzes images from camera 87); 17:55-58 (describing that gestures are tracked "using algorithms previously described"); *id.*, 7:66-67 (referencing "commonly used tracking algorithms").) Given that main system 35 may be a general-purpose computer, Ex. PA-1, 7:13-16, a POSITA would have understood that main system 35 is programmed based on "algorithms" to perform the disclosed functions. (Ex. PA-DEC, ¶ 72.) Accordingly, *Sears* discloses the claimed "processing unit" that is "adapted to" perform the identified function. (Ex. PA-1, 7:13-16 (describing that main system 35 may be a "general purpose computer."), 27:30-34 ("Because the computer of the main system is generally high performance, this allows considerable 'intelligence' to reside in the software program for tracking text, rather than requiring the user to track it manually."), 26:65-66 ("The system may be used with general-purpose computers…."); Ex. PA-DEC, ¶ 72.) Accordingly, *Sears* discloses or suggests this limitation under both the Requester's proposed constructions, and the interpretations proposed by PO and found by the district court. (*See* Section IV; EX. CC-2.)

e. [1.e] wherein the processing unit is adapted to . . . control the digital camera in response to the gesture performed in the electro-optical sensor field of view, wherein the gesture corresponds to an image capture command, and wherein the image capture command causes the digital camera to store an image to memory.

Sears discloses or suggests this limitation in two ways. (Ex. PA-DEC, ¶ 73.)

First, *Sears* discloses that camera 87 senses a gestural command and, in response, main system 35 directs camera 89 to capture an image (i.e., "wherein the processing unit is adapted to . . . control the digital camera in response to the gesture performed in the electro-optical sensor field of view, wherein the gesture corresponds to an image capture command").

To begin, *Sears* discloses, with reference to the Figure 3 embodiment, that main system 35 ("processing unit") controls camera 89 ("digital camera") to perform image captures. (Ex. PA-1, 18:9-13 ("[T]he coordinated action of the cameras 87 and 89 . . . are preferably controlled by the computer located in the main system 35."); *id.*, 16:41-44 (explaining that camera 89 allows for accurate optical character recognition of text); *id.*, 19:31-36 (disclosing that camera 89 captures images of printed material).) *Sears* also discloses that the image capture is performed in response to a "gestur[e]" (*id.*, 18:33-38) that is performed within the field of view of camera 87 ("electro-optical sensor") (*supra* Section V.A.2.d). Given that main system 35 determines what gestures are observed by camera 87 (*supra* Section V.A.2.d), and controls camera 89 to capture images (Ex. PA-1, 18:33-38), *Sears* discloses that "the processing unit is adapted to . . . control the digital camera in response to the gesture performed in the electro-optical sensor field of view." (Ex. PA-DEC, ¶ 75.)

Furthermore, *Sears* discloses that:

> if the **gestural command directs the system to read text** already interpreted, vocalization of the text through speech synthesis 63 can begin almost immediately. If the text to be read is not among that already interpreted, then **image capture 51 of the indicated text using high pixel densities suitable for OCR 55 can begin**.

(Ex. PA-1, 18:33-38 (emphasis added).) That is, in *Sears* a gestural command captured by camera 87 ("gesture performed in the electro-optical sensor field of view") "corresponds to an image capture command," as claimed, because *Sears*'s gestural command "begin[s]" the process of "image capture . . . of the indicated text" using camera 89 ("digital camera") for the OCR process when the text to be read is not among that already interpreted. (Ex. PA-DEC, ¶ 76.)

Again, the *Sears* gestural commands also meet the requirements of Requester's gesture construction, "a sequence of positions that conveys a meaning," and the district court's gesture construction discussed above, i.e., "movement of hands or other body parts that conveys meaning," *supra* Section IV.A, at least because *Sears* discloses that the hand moving gestures performed convey commands, e.g., to control the reading of the text. (*See*, *e.g.*, Ex. PA-1, 16:17-19; *id.*, 10:39-65 (describing various hand moving gestures such as a moving double finger gesture); *see also id.*, 6:4-11, 9:41-64, 9:65-10:5, 22:5-8; *id.*, 17:55-58 (emphasis added) ("Once the user's hand or finger is identified . . . , the hand can be tracked until **a command is received**, either **through hand movement**, finger orientation or position, or other input modality.").)

Accordingly, *Sears* discloses or suggests this limitation under both the Requester's proposed constructions, and the interpretations proposed by PO and found by the district court. (*See* Section IV; EX. CC-2.)

Additionally, *Sears* discloses "wherein the image capture command causes the digital camera to store an image to memory." (Ex. PA-DEC, ¶ 77.) For example, as discussed above, *Sears* discloses that following the image capture step 51, the images are subject to the OCR process 55 and other processes (e.g., image enhancement 73, video maxing 67, video display 71, text selection 59). (Ex. PA-1, 5:44-6:48 (disclosing with reference to Figure 2 steps for reading text on printed material 33).) When **camera 89** captures an image, *id.*, 16:41-44, 19:31-36, it communicates image data via "a **direct memory access** (DMA) interface" to save the image in memory. (*Id.*, 58-64 (explaining that a camera includes a special frame grabber that communicates with main system 35 via DMA) (emphasis added);[13] *id.*, 18:9-14 (explaining that image capture camera 89 is connected electronically to main system 35); Ex. PA-DEC, ¶ 77.) Camera 89 would at least temporarily store a captured image in certain memory, e.g., memory of main system 35 or a local memory, to transmit images or allow the system to analyze/store an image. (Ex. PA-1, 18:12-13 ("[M]ain system 35 [] is engaged in the analysis of images from the camera."); Ex. PA-10, FIG. 1, 3:32-42, 4:12-17, 5:49-6:17 (cited in '949 patent) (explaining how a camera stores an image in various memory circuits during operation); Ex. PA-11, FIG. 1, 6:42-45, 7:1-5 (cited in '949 patent) (same); Ex. PA-DEC, ¶ 77.) In fact, *Sears* discloses that main system 35 includes memory or at least has access to memory for such camera storage. (Ex. PA-1, 20:13-14 ("graphics memory of the computer"); *see also id.*, 15:47-50 ("the text and images captured by the system of the present invention can be used to input the text and images for storage and use on the main system 35 computer."); *id.*, 15:54-56 ("home or business users can make manual gestures to copy portions of letters, bills, and advertisements into computer storage files the designate."); *id.*, 15:63-67 ("The user, for example, can open the letter, visually scan it for pertinent data, manually gesture for the data to keep, speak into a computer voice recognition system to indicate the disposition of the data, and then dispose of the letter.").)

[13] *Sears* discloses with reference to the Figure 3 embodiment that camera 89 is connected electronically to main system 35. (Ex. PA-1, 18:9-14.) Thus, a POSITA would have understood that disclosures associated with camera connections to main system 35 with reference to the preceding embodiments apply to the embodiment associated with Figure 3. (Ex. PA-DEC, ¶ 77 n.4.)

Second, *Sears* suggests that camera 87 senses a gestural command and, in response, main system 35 directs camera 89 to capture an image to perform a scan function as claimed. In the embodiment associated with Figure 1, *Sears* discloses using "**manual gestures to copy portions of letters, bills, and advertisements into computer storage files**." (*Id.*, 15:54-56 (emphasis added).) Responsive to an appropriate manual gesture, i.e., an image capture command to perform a copy function, a "digital camera" of the reading machine captures images of the letters, bills, etc. (*Id.*, 7:35-37 (disclosing the use of a "digital camera . . . for the present invention"); *id.*, 15:47-56.) With respect to the Figure 3 embodiment, a POSITA would have understood camera 89 ("digital camera") to serve as a suitable scanner camera, at least because both cameras 87 and 89 can be used to image text, *id.*, 19:33-36, 22:1-3, and camera 89 has a high resolution that would be helpful for scanning quality images, *id.*, 17:14 (expressing that camera 89 has a "high-resolution"); *id.*, 17:28-43 (explaining that camera 89 can view an entire document). And because camera 87 senses gestures, main system 35 analyzes gestures, and main system controls the cameras in response to gestures (explained above), implementing the scan function in Figure 3 suggests "wherein the processing unit is adapted to . . . control the digital camera in response to the gesture performed in the electro-optical sensor field of view." (Ex. PA-DEC, ¶ 78.) Moreover, the gesture "corresponds to an image capture command," as claimed, because *Sears*'s gestural command triggers an "image[] capture[]" to perform the scan function. (Ex. PA-1, 15:47-56; Ex. PA-DEC, ¶ 78.) And similar to how camera 89 stores an image to perform an OCR function (explained above), the image capture command to perform the scan operation would cause camera 89 to store an image to memory. (Ex. PA-DEC, ¶ 78.) The various *Sears* manual gestures are described above. (*See, e.g.*, *supra* Section V.A.2.d.)

A POSITA would have found it beneficial to implement the scanner functionality in the Figure 3 embodiment. (Ex. PA-DEC, ¶ 79.) In fact, *Sears* lists several benefits to using the reading machine as a scanner, e.g., valuable desktop surface would "not consumed with a bulky scanner," increased conveniences associated with a gesture-controlled scanner. (Ex. PA-1, 15:56-67.) *Sears* explains that when using the disclosed scanner feature "the time required for scanning is not required," because "[t]he user, for example, can open the letter, visually scan it for pertinent data, manually gesture for the data to keep, speak into a computer voice recognition system to indicate the disposition of the data, and then dispose of the letter." (*Id.*, 15:63-67; *see also id.*, 19:45-56

(disclosing that use of the reading machine to scan printed material provides "immediate reading" while traditional scanners "require up to a minute or more to scan a page of text").)

Furthermore, a POSITA would have been motivated to have main system 35 detect gestures performed in the field of view of the camera 87 and, based on a performed gesture, trigger camera 89 ("digital camera") to capture and store an image to memory as claimed. (Ex. PA-DEC, ¶ 80.) Low-resolution camera 87 has a wide FOV for easily detecting gestures. (Ex. PA-1, 27:39-41, 16:16-18.) Camera 89 has a high resolution and can image a full document, which would be helpful for making high quality scans. (*Id.*, 17:14 (expressing that camera 89 has a "high-resolution"); *id.*, 17:28-43 (explaining that camera 89 can view an entire document); Ex. PA-DEC, ¶ 80.) The proposed modification would have allowed a large field of view for gesture tracking (by using wide-angle FOV camera 87) while achieving high resolution image reproduction for copying/scanning the image of the printed material (using camera 89 of a high pixel density). (*See* Ex. PA-1, 16:14-44 (disclosing that camera 87 tracks gestures and camera 89 can recognize text in the Figure 3 embodiment).) Camera 87 could also help scan the document in a configuration where both cameras image the text. (*Id.*, 19:33-36, 22:1-3.)

A POSITA would have had the capability and a reasonable expectation of success in implementing these features because the modifications described above are consistent with the operating principle of the Figure 3 embodiment. (*See Id.*, 16:14-44 (disclosing characteristics of the two cameras used in the Figure 3 embodiment); Ex. PA-DEC, ¶¶ 81.) As described above with respect to Figure 3, camera 87 tracks gestures, camera 89 images text, and main system detects gestures and controls cameras. The proposed modification adds a scan function that is consistent with the operation of this hardware. (Ex. PA-DEC, ¶ 81.) It would have combined known technologies (e.g., control computers and cameras) according to known methods (e.g., gesture controlled scanning) to yield a predictable gesture controlled scanner. (Ex. PA-DEC, ¶ 81.) *See KSR Intern. Co. v. Teleflex Inc.*, 550 U.S. 398, 416 (2007).

For similar reasons, *Sears* also discloses the claimed "processing unit" that is "adapted to" perform the identified function under construction discussed above, i.e., software running on a processor that is programmed to perform the claimed function or equivalents thereof. (Ex. PA-DEC, ¶ 82.) For example, *Sears* discloses that the computer of main system 35 is programmed/"adapted to" to track text, detect various gestures, and perform a host of other functions. (Ex. PA-1, 27:30-34 ("Because the computer of the main system is generally high

performance, this allows considerable 'intelligence' to reside in the software program for tracking text, rather than requiring the user to track it manually."); *id.*, 16:24 (explaining that the computer of main system runs "software"); *id.*, 7:1-11 (expressing that main system may run Windows and other programs); 18:9-15 (explaining that main system 35 controls the cameras); *id.*, 16:17-19 (describing that camera 87 tracks gestures); *id.*, 18:9-13 (describing that main system 35 analyzes images from camera 87); *id.*, 17:55-58 (describing that gestures are tracked "using algorithms previously described"); *id.*, 7:66-67 (referencing "commonly used tracking algorithms").) Given that main system 35 may be a general purpose computer, *id.*, 7:13-16, a POSITA would have understood that main system 35 is programmed based on the "algorithms" to control cameras in response to gestures as claimed. (Ex. PA-DEC, ¶ 82.) Accordingly, *Sears* discloses the claimed "processing unit" that is "adapted to" perform the identified function under Requester's construction. (Ex. PA-1, 7:13-16 (describing that main system 35 may be a "general purpose computer."); *id.*, 27:30-34 ("Because the computer of the main system is generally high performance, this allows considerable 'intelligence' to reside in the software program for tracking text, rather than requiring the user to track it manually."); *id.*, 26:65-66 ("The system may be used with general-purpose computers . . . ."); Ex. PA-DEC, ¶ 82.)

Accordingly, *Sears* discloses or suggests this limitation under both the Requester's proposed constructions, and the interpretations proposed by PO and found by the district court. (*See* Section IV; EX. CC-2.)

3. Claim 2

a. The portable device of claim 1 wherein the determined gesture includes a hand motion.

Sears discloses this limitation. (Ex. PA-DEC, ¶ 83.) For instance, *Sears* discloses "[a] set of gestural movements along with the command interpretations constitutes a gestural user interface," including for example, "[o]ne or more **fingers moving back and forth** would constitute a clear command, stopping any current reading." (Ex. PA-1, 10:39-61.) And consistent with Requester's construction, main system 35 is programmed to determine which gestures are made. (*Supra* Section V.A.2.d.)

Such *Sears* hand motions meet the requirements of Requester's gesture construction, "a sequence of positions that conveys a meaning," and the district court's gesture construction discussed above, i.e., "movement of hands or other body parts that conveys meaning," *supra*

Section IV.A, at least because *Sears* discloses that the hand moving gestures performed convey commands, e.g., to control the reading of the text. (*See*, *e.g.*, Ex. PA-1, 16:17-19; *id.*, 10:39-65 (describing various hand moving gestures such as a moving double finger gesture); *see also id.*, 6:4-11, 9:41-64, 9:65-10:5, 22:5-8; *id.*, 17:55-58 (emphasis added) ("Once the user's hand or finger is identified . . . , the hand can be tracked until **a command is received**, either **through hand movement**, finger orientation or position, or other input modality.").) Accordingly, *Sears* discloses or suggests this limitation under both the Requester's proposed constructions, and the those proposed by PO and found by the district court. (*See* Section IV.)

4. Claim 3

a. The portable device of claim 1 wherein the determined gesture includes a pose.

Sears discloses this limitation. (Ex. PA-DEC, ¶ 85.) For instance, *Sears* discloses "[a] set of gestural movements along with the command interpretations constitutes a gestural user interface," including gestures for controlling text reading consisting of either a single, double, or triple finger pose that moves across the page to instruct the system. (Ex. PA-1, 10:50-62 ("Moving a single finger horizontally across a page reads the text in the line above the finger at a rate such that the vocalized texts keeps pace with the movement of the finger, moving the finger vertically reads the single word in each line closest to the finger as the line is passed by the finger. Moving a double finger (two fingers extended side-by-side) vertically through the text reads the text at a rate whose speed is roughly proportional to the speed of the hand, but which has lower and higher predetermined rates which may not be exceeded. Moving a triple finger (three fingers extended side-by-side) vertically through the text reads the text at a rate 'without limits', reading at the speed that the fingers move."); *see also id.*, 10:66-11:3 (describing wiggling finger gesture that includes a one finger hand pose).) The *Sears* hand motions that include poses also fall within the scope of Requester's gesture construction, "a sequence of positions that conveys a meaning," and the district court's gesture construction discussed above, i.e., "movement of hands or other body parts that conveys meaning," *supra* Section IV.A. Accordingly, *Sears* discloses "the determined gesture includes a pose," as claimed. *Sears* likewise discloses this limitation under Requester's constructions, as main system 35 is programmed to determine which gestures are made, *supra* Section V.A.2.d, and the moving finger gestures include a sequence of positions that conveys a meaning, e.g., a command to read the text at a rate consistent with the pace of the moving finger.

Accordingly, *Sears* discloses or suggests this limitation under both the Requester's proposed constructions, and the plain meaning proposed by PO and found by the district court for the claimed "gesture." (*See* Section IV.)

5. Claim 4

a. The portable device of claim 1 wherein the electro-optical sensor is fixed in relation to the digital camera.

Sears discloses this limitation. (Ex. PA-DEC, ¶ 87.) As explained for claim 1, *Sears* discloses that camera 87 ("electro-optical sensor") and camera 89 ("digital camera") are included in a "common housing" when implemented as a "portable version" and that it would have been obvious to implement such features to the extent they are not disclosed. (*Supra* Section V.A.2.b; Ex. PA-1, 20:65-21:1.) Furthermore, *Sears* discloses that the cameras are "at a fixed location." (Ex. PA-1, 22:1-3 ("In the previous embodiments of the present invention, **the camera or cameras** capturing the images of text to be read **are** either **at a fixed location**, or located relatively distantly from the text (e.g., mounted on the user's head or chest).").) As such, a POSITA would have understood that cameras 87 and 89 are fixed in relation to each other, in such a common device housing configuration as explained above for claim 1.

To the extent a POSITA would not have understood that the electo-optical sensor and the digital camera would have been fixed and facing forward in the *Sears* common housing (as disclosed or as modified (*see* Section V.A.2.b)), it would have been obvious to implement such features. For instance, a POSITA would have appreciated that device housings regularly fix the location of portable cameras and sensors. (Ex. PA-DEC, ¶ 89; *see also* Ex. PA-2, 22 (disclosing "a conventional laptop computer 70 . . . is provided with two digital cameras 12,14, one being disposed at either corner in the upper region of the screen area 20"); Ex. PA-7, FIGs 1, 5 (disclosing a camera housing that includes a control circuit, a forward facing camera, and a forward facing photo diode sensor).) The motivation for such a configuration would have been to prevent the cameras from moving in the portable device and getting damaged, taking unwanted images, etc. (Ex. PA-DEC, ¶ 89.) With such housing protection, a POSITA would have been motivated to keep the cameras in the forward facing orientation to maintain the functionality described by *Sears*. (*Supra* Section V.A.2.b.) And a POSITA would have had a reasonable expectation of success in such an implementation, particularly because *Sears* itself discloses that the electro-optical sensor and the digital camera can be fixed in location, Ex. PA-1, 22:1-3, and describes that the cameras

both face the same direction in use, *supra* Section V.A.2.b. Further, the proposed modification would have combined known technologies (e.g., known camera hardware) according to known methods (e.g., implementing a portable device with an electro-optical sensor and a camera) to yield the predictable result of an electro-optical sensor and a digital camera that are fixed in a forward facing portion of a device housing. (Ex. PA-DEC, ¶ 89.) *See KSR Intern. Co. v. Teleflex Inc.*, 550 U.S. 398, 416 (2007).

6. Claim 5

a. The portable device of claim 1 further including a forward facing light source.

Sears discloses or suggests this limitation. (Ex. PA-DEC, ¶ 90.) For example, *Sears* discloses that "wide-field illuminator 97" ("forward facing light source") provides additional illumination of text to be read. (Ex. PA-1, 17:18-28.) Illuminator 97 faces forward at least because it illuminates the fields of view of the cameras. (*Id.*, 17:18-28, FIG. 3; *supra* Section V.A.2.b.) Accordingly, *Sears* discloses or suggests this limitation under the plain meaning interpretations proposed by PO and found by the district court. (*See* Section IV; EX. CC-2.)

7. Claim 6

a. The portable device of claim 1 wherein the electro-optical sensor defines a resolution less than a resolution defined by the digital camera.

Sears discloses this limitation. (Ex. PA-DEC, ¶ 92.) For example, *Sears* discloses that camera 89 ("digital camera") is a "high-resolution" camera. (Ex. PA-1, 17:14.) Camera 87 ("electro optical sensor"), in contrast, is a low-resolution camera. (*Id.*, 27:38-40 (disclosing that "low resolution, wide field images are used to interpret gestural commands"), 16:17-19 (disclosing that "wide-angle FOV camera 87 is used to track command gestures"); Ex. PA-DEC, ¶ 93; *see also* Ex. PA-1, 18:26-44.) Accordingly, *Sears* discloses that camera 87 ("electro optical sensor") "defines a resolution less than a resolution defined by" camera 89 ("digital camera"). (Ex. PA-DEC, ¶ 93.)

8. Claim 7

a. The portable device of claim 1 wherein the electro-optical sensor includes at least one of a CCD detector and a CMOS detector.

Sears discloses that, in a "portable version" of the reading machine, the two cameras ("electro-optical sensor" and "digital camera") used therein may be Sony's DXC-LS1 digital cameras. (Ex. PA-1, 20:65-21:16; *supra* Section V.A.2.a.) A POSITA would have understood that the Sony camera includes a CCD image sensor. (Ex. PA-6,[14] 2 ("The camera head features a Sony Interline Transfer Hyper HADTM (Hole Accumulated Diode) CCD image sensor that packs 380,000 picture elements into only a quarter of an inch. The camera control unit incorporates a powerful DSP (Digital Signal Processor) which provides enhanced picture quality, plus the automatic adjustment features that make the camera so easy to use."); Ex. PA-DEC, ¶ 94.) Accordingly, *Sears* discloses this limitation. (Ex. PA-DEC, ¶ 94.) To the extent the Sony DXC-LS1 camera is read not to include a CCD detector, the claimed configuration would have been obvious. *Sears* repeatedly discloses that a camera—like the Sony camera described in *Sears*—may consist of a "CCD" sensor. (Ex. PA-1, 5:4-6 (disclosing "one or more electronic imaging devices (such as CCD or CMOS 35 cameras)"); *id.*, 5:7-9 ("A camera 39 . . . may comprise a CCD or CMOS imaging sensor 41.").) Even the '949 patent explains that digital cameras conventionally included CCD or other sensors. (Ex. PAT-A, 1:15-18 ("Representative of USA patents on Digital cameras are U.S. Pat. Nos. 5,534,921, 5,249,053 and many others which describe use of matrix array (CCD or otherwise) based cameras to take pictures of humans or other objects.").) Thus, configuring the camera in *Sears* to include a CCD detector would have been nothing more than a combination of known prior art elements (e.g., known camera elements) according to known methods (e.g., implementing a digital camera) to yield the predictable result of an electro-optical sensor that includes a CCD sensor. *See KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 416 (2007) ("The combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results."). Accordingly, *Sears* also renders this limitation obvious. (Ex. PA-DEC, ¶ 94.)

9. Claim 8

[14] Ex. PA-6 explains various low-level details of a DXC-LS1 camera and is consistent with how a POSITA would have understood a DXC-LS1 camera before the critical date.

a. [8.a] A computer implemented method comprising:

Sears discloses this preamble to the extent it is limiting. (Ex. PA-DEC, ¶ 95.) For example, *Sears* discloses that main system 35 includes a "computer" and is used implement the gesture control process detailed in [8.a]-[8.d]. (Ex. PA-1, 18:9-19; *id.*, 6:48-7:12 (describing how 35 determines gestures and controls a reading machine based on sensor signals); *see also* citations and analysis above for claim 1 (describing aspects of *Sears*'s reading machine, which is operated in accordance with a method).)

b. [8.b] providing a portable device including a forward facing portion encompassing a digital camera and an electro-optical sensor, the electro-optical sensor having an output and defining a field of view;

Sears discloses or suggests this limitation for at least the reasons as presented above for claims [1.a] and [1.b]. (*See supra* Section V.A.2.a-b; Ex. PA-DEC, ¶ 96.) As explained in claim 1, by disclosing the use of a "portable device" including a forward facing portion encompassing a digital camera and an electro-optical sensor, the electro-optical sensor having an output and defining a field of view, *Sears* discloses "providing" such a "portable device." (*See supra* Section V.A.2.a-b.) Indeed, the "providing" step of the method is disclosed as evidenced by the portable device disclosed by *Sears.* (*Id.*) Accordingly, *Sears* discloses this limitation under the Requester's proposed construction and the interpretations proposed by PO and found by the district court's claim construction order. (*See infra* Section IV; CC-2.)

c. [8.c] determining, using a processing unit, a gesture has been performed in the electro-optical sensor field of view based on the electro-optical sensor output, wherein the determined gesture corresponds to an image capture command; and

Sears discloses or suggests this limitation for at least the reasons as presented above for claims [1.c], [1.d], and [1.e]. (*See supra* Section V.A.2.c-e; Ex. PA-DEC, ¶ 97.) By disclosing or suggesting the use of a "processing unit" to "determine a gesture has been performed in the electro-optical sensor field of view based on the electro-optical sensor output . . . wherein the gesture corresponds to an image capture command," *Sears* discloses or suggests the claimed "determining" method step. (*See supra* Section V.A.2.c-e.) Indeed, the determining step is performed when the portable reading device is provided and, for example, detects gestures as claimed. (*Id.*; *see also* Ex. PA-1, 18:33-38 (describing an embodiment wherein a hand gesture commands the system to

take an image); *id.*, 15:54-56 (describing another embodiment wherein a hand gesture commands the system to take an image for a scan function); *id.*, 17:14 (expressing that camera 89 has a "high-resolution"); *id.*, 17:28-43 (explaining that camera 89 can view an entire document); *id.*, 16:14-44 (disclosing that camera 87 tracks gestures and camera 89 can recognize text in the Figure 3 embodiment).)

d. [8.d] capturing an image to the digital camera in response to the determined gesture corresponding to the image capture command.

Sears discloses or suggests this limitation for at least the reasons as presented above for claims [1.d] and [1.e]. (*See supra* Section V.A.2.d-e; Ex. PA-DEC, ¶ 98.) Moreover, the "digital camera" disclosed or suggested by *Sears* in claim 1 "store[s] an image to memory," *supra* Section V.A.2.d-e, which, as disclosed by *Sears*, includes a method step for "capturing an image to the digital camera." (Ex. PA-1, 18:33-38 (emphasis added) ("[I]f the gestural command directs the system to read text already interpreted, vocalization of the text through speech synthesis 63 can begin almost immediately. If the text to be read is not among that already interpreted, then **image capture 51** of the indicated text using high pixel densities suitable for OCR 55 can begin."); *id.*, 15:54-56 (describing another embodiment wherein a hand gesture commands the system to take an image for a scan function).) Further, the image capturing method of the digital camera is performed "in response to the determined gesture corresponding to the image capture command" at least because gestures are determined by the system to trigger the scan and/or image capture functions. (*Supra* Section V.A.2.d-e.)

10. Claim 9

a. The method according to claim 8 wherein the determined gesture includes a hand motion.

Sears discloses or suggests this limitation for at least the same reasons as presented above for claims 2 and 8. (*See supra* Sections V.A.3, V.A.9; Ex. PA-DEC, ¶ 99.)

11. Claim 10

a. The method according to claim 8 wherein the determined gesture includes a pose.

Sears discloses or suggests this limitation for at least the same reasons as presented above for claims 3 and 8. (*See supra* Sections V.A.4, V.A.9; Ex. PA-DEC, ¶ 100.)

12. Claim 11

a. The method according to claim 8 wherein the electro-optical sensor includes first and second sensors in fixed relation relative to the digital camera.

As discussed above in Section V.A.5 (claim 4), *Sears* discloses or suggests that the electro-optical sensor and digital camera are fixed in relation relative to each other. (*Supra* Section V.A.5.) *Sears* also discloses "the electro-optical sensor includes first and second sensors in fixed relation relative to the digital camera," as claimed. (Ex. PA-DEC, ¶ 101.)

Sears discloses that, in the "portable version" of the reading machine, the two cameras ("electro-optical sensor" and "digital camera") used therein may be Sony's DXC-LS1 digital cameras. (Ex. PA-1, 20:65-21:16; *supra* Section V.A.2.a.) A POSITA would have understood that the Sony camera includes a CCD image sensor. (Ex. PA-6,[15] 2 ("The camera head features a Sony Interline Transfer Hyper HADTM (Hole Accumulated Diode) CCD image sensor that packs 380,000 picture elements into only a quarter of an inch. The camera control unit incorporates a powerful DSP (Digital Signal Processor) which provides enhanced picture quality, plus the automatic adjustment features that make the camera so easy to use."); Ex. PA-DEC, ¶ 102.) To the extent the Sony DXC-LS1 camera is read not to include a CCD detector, *Sears* repeatedly discloses that a camera—like the Sony camera described in *Sears*—may consist of a "CCD" sensor. (Ex. PA-1, 5:4-6 (disclosing "one or more electronic imaging devices (such as CCD or CMOS 35 cameras)"); *id.*, 5:7-9 ("A camera 39 . . . may comprise a CCD or CMOS imaging sensor 41.").) Even the '949 patent explains that digital cameras conventionally included CCD or other sensors. (Ex. PAT-A, 1:15-18 ("Representative of USA patents on Digital cameras are U.S. Pat. Nos. 5,534,921, 5,249,053 and many others which describe use of matrix array (CCD or otherwise) based cameras to take pictures of humans or other objects.").) Thus, configuring the camera in *Sears* to include a CCD detector would have been nothing more than a combination of known prior art elements (e.g., known camera elements) according to known methods (e.g., implementing a digital camera) to yield the predictable result of an electro-optical sensor that includes a CCD sensor. *See KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 416 (2007) ("The combination of familiar elements according to known methods is likely to be obvious when it does no more than yield

[15] Ex. PA-6 explains various low-level details of a DXC-LS1 camera and is consistent with how a POSITA would have understood a DXC-LS1 camera before the critical date.

predictable results."). Accordingly, it was also obvious for the *Sears* camera to include a CCD detector. (Ex. PA-DEC, ¶ 102.)

A POSITA would have understood that a CCD sensor includes an array of photo sensors. (Ex. PA-5, 1:29-30 (disclosing "a conventional CCD chip having an array of photosensors"); Ex. PA-6, 2 ("CCD image sensor . . . packs 380,000 picture elements").) A POSITA would also have understood that various photosensors in the prior art devices did not move around inside of a CCD circuit. (Ex. PA-DEC, ¶ 103.) Accordingly, *Sears* discloses or suggests that camera 87 ("electro-optical sensor"), which may be a CCD sensor based Sony camera, "includes first and second sensors in fixed relation relative to" camera 89 ("digital camera"). (Ex. PA-DEC, ¶ 103.) This is the case because the electro-optical sensor is fixed in relation to the digital camera, *supra* Section V.A.5, and photosensors in the prior art devices did not move around inside of a CCD circuit. (Ex. PA-DEC, ¶ 103.)

To the extent that *Sears* is read not to disclose or suggest claim 11 as discussed above, *Sears* renders claim 11 obvious for another reason. (Ex. PA-DEC, ¶ 104.) *Sears* discloses in the context of the Figure 1 embodiment that multiple cameras with partial overlap may be used cover large fields of view:

> In order to **provide systems with large fields of view**, using inexpensive cameras of small size, **multiple cameras with partial overlap may be used**. For example, with the DVC-323 camera previously mentioned, the field of view in macro mode is 4.7 by 3.5 inches, providing a resolution near the lowest possible for optical character recognition. Four cameras arranged in a rectangular arrangement with minimal 0.2 inch overlap in their fields of view would provide a composite field of view of 9.0 by 6.6 inches, which is adequate to cover a standard 8.5 by 11 page with 1 inch margins. **Additional cameras or cameras with higher pixel counts could cover even larger fields of view**.

(Ex. PA-1, 15:23-34 (emphasis added); Ex. PA-DEC, ¶ 104.)

A POSITA would have been motivated to modify *Sears* such that its camera for gesture recognition, e.g., camera 87 as discussed in the Figure 3 embodiment, is replaced with multiple cameras ("first and second sensors") in view of the Figure 1 embodiment discussed above. (Ex. PA-DEC, ¶ 105.) This is because such modification would have allowed the reading machine to detect gesture commands for copying or scanning on large-sized printed materials because of the

increased fields of view by using multiple cameras for gesture detections. (Ex. PA-1, 15:23-34; Ex. PA-DEC, ¶ 105.) Moreover, each camera sensor, which may have a limited field of view, *id.*, 15:23-34, would be required to detect gestures to provide functionality for reading text under the camera, zooming in on specified text, etc. (*Id.*, 10:38-65; Ex. PA-DEC, ¶ 105.) Furthermore, a POSITA would have been motivated to implement these multiple cameras in a way that they are "in fixed relation relative to" the high-pixel density camera, e.g., camera 89 ("digital camera"), particularly when these components are integrated in a common housing, as it would have improved portability of the reading machine. (Ex. PA-DEC, ¶ 105.) This is also true because the multiple cameras are implemented to have a partial overlap amongst each other in order to cover a large printed material. (Ex. PA-1, 15:23-25 ("In order to provide systems with large fields of view, using inexpensive cameras of small size, multiple cameras with partial overlap may be used.").) A POSITA would have understood that by having the multiple gesture detection cameras "in fixed relation relative to" the high-pixel density camera for image capture, the user would not have to re-calibrate the positions of the cameras before each time start using the machine. (Ex. PA-DEC, ¶ 105.)

A POSITA would have had a reasonable expectation of success in such an implementation, particularly because *Sears* itself expressly discloses using multiple cameras that are commercially available and "inexpensive." (Ex. PA-1, 15:23-34 ("using inexpensive cameras of small size, multiple cameras with partial overlap may be used," e.g., "the [Kodak] DVC-323 camera"); *see also id.*, 7:35-36 ("The DVC-323 digital camera from Kodak (Rochester, N.Y.) has minimal but sufficient operating characteristics for the present invention.").) The proposed modification would have combined known technologies (e.g., known camera hardware) according to known methods (e.g., implementing a portable device of multiple cameras) to yield the predictable result of a gesture detection camera ("electro-optical sensor") that includes two cameras ("first and second sensors"). (Ex. PA-DEC, ¶ 106.) *See KSR Intern. Co. v. Teleflex Inc.*, 550 U.S. 398, 416 (2007).

13. Claim 12

a. The method according to claim 8 wherein the electro-optical sensor defines a resolution less than a resolution defined by the digital camera.

Sears discloses or suggests this limitation for at least the same reasons as presented above for claims 6 and 8. (*See supra* Section V.A.7, V.A.9; Ex. PA-DEC, ¶ 107.)

14. Claim 13

a. [13.a] An image capture device comprising:

To the extent the preamble is limiting, *Sears* discloses or suggests this limitation for at least the same reasons as presented above for claim 1. (*See supra* Section V.A.2; Ex. PA-DEC, ¶¶ 108; *see also* Ex. PA-1, 16:14-18:44 (disclosing that the reading machine of FIG. 3 "capture[s]" various "images").) For instance, *Sears*'s components 87, 89, 35 shown in FIG. 3 comprise an "image capture device" that is capable of capturing images. (*Id.*, 18:33-38 (emphasis added) ("[I]f the gestural command directs the system to read text already interpreted, vocalization of the text through speech synthesis 63 can begin almost immediately. If the text to be read is not among that already interpreted, then **image capture 51** of the indicated text using high pixel densities suitable for OCR 55 can begin."); *id.*, 15:54-56 (describing another embodiment wherein a hand gesture commands the system to take an image for a scan function).); *see also* analysis and citations below for limitations [13.b]-[13.e].) The reading machine includes a device housing as discussed below. (*See* analysis and citations below for limitations [13.b]-[13.e].)

b. [13.b] a device housing including a forward facing portion, the forwarding facing portion encompassing a digital camera adapted to capture an image and having a field of view and encompassing a sensor adapted to detect a gesture in the digital camera field of view; and

Sears discloses or suggests this limitation for at least the same reasons as presented above for claims [1.b], [1.d], and [1.e]. (*See supra* Section V.A.2.b, d-e; Ex. PA-DEC, ¶ 109.) Moreover, this mapping comports with Requester's construction that a digital camera is "designed to" perform as claimed. (Ex. PA-1, 16:15-45, 18:9-19:36, 22:1-5 (disclosing how camera 89 "captur[es] images" of text).) Accordingly, *Sears* discloses this limitation under the Requester's proposed construction and the interpretations proposed by PO and found by the district court's claim construction order. (*See infra* Section IV; CC-2.)

c. [13.c] a processing unit operatively coupled to the sensor and to the digital camera, wherein the processing unit is adapted to:

Sears discloses or suggests this limitation for at least the same reasons as presented above for claims [1.c], [1.d], and [1.e]. (*See supra* Section V.A.2.c-e; Ex. PA-DEC, ¶ 110.)

d. [13.d] detect a gesture has been performed in the electro-optical sensor field of view based on an output of the electro-optical sensor, and

Sears discloses or suggests this limitation for at least the same reasons as presented above for claims [1.d]. (*See supra* Section V.A.2.d; Ex. PA-DEC, ¶ 111.)

e. [13.e] correlate the gesture detected by the sensor with an image capture function and subsequently capture an image using the digital camera, wherein the detected gesture is identified by the processing unit apart from a plurality of gestures.

Sears discloses or suggests this limitation for at least the same reasons as presented above for claims [1.e] and 2-3. (*See supra* Sections V.A.2-3; Ex. PA-DEC, ¶ 112.) For instance, a POSITA would have understood that the *Sears* system can "correlate the gesture detected by the sensor with an image capture function" because a gesture triggers an image capture command. (S*upra* Section V.A.2.e; *see also* Ex. PA-1, 10:39-40 ("A set of gestural movements along with the command interpretations constitutes a gestural user interface.").) The detected gesture may be one of a plurality of distinct predetermined gestures that triggers the system, *supra* Section V.A.3-4, such that the detected gesture is identified by the processing unit apart from a plurality of gestures. Accordingly, *Sears* discloses or suggests this limitation under both the Requester's proposed constructions, and the interpretations proposed by PO and found by the district court. (*See* Section IV; EX. CC-2.)

15. Claim 14

a. The image capture device of claim 13 wherein the detected gesture includes a hand motion.

Sears discloses or suggests this limitation for at least the same reasons as presented above for claims 2 and 13. (*See supra* Sections V.A.3, V.A.14; Ex. PA-DEC, ¶ 113.)

16. Claim 15

a. The image capture device of claim 13 wherein the detected gesture includes a pose.

Sears discloses or suggests this limitation for at least the same reasons as presented above for claims 3 and 13. (*See supra* Sections V.A.4, V.A.14; Ex. PA-DEC, ¶ 114.)

17. Claim 16

a. The image capture device of claim 13 further including a forward facing light source.

Sears discloses or suggests this limitation for at least the same reasons as presented above for claims 5 and 13. (*See supra* Sections V.A.6, V.A.14; Ex. PA-DEC, ¶ 115.) Accordingly, *Sears* discloses or suggests this limitation under the plain meaning interpretations proposed by PO and found by the district court. (*See* Section IV; EX. CC-2.)

18. Claim 17

a. The image capture device of claim 13 wherein the sensor defines a resolution less than a resolution defined by the digital camera.

Sears discloses or suggests this limitation for at least the same reasons as presented above for claims 6 and 13. (*See supra* Sections V.A.7, V.A.14; Ex. PA-DEC, ¶ 116.)

19. Claim 18

a. The image capture device of claim 13 wherein the sensor is fixed in relation to the digital camera.

Sears discloses or suggests this limitation for at least the same reasons as presented above for claims 4 and 13. (*See supra* Sections V.A.5, V.A.14; Ex. PA-DEC, ¶ 117.)

B. SNQ2: *Sears* in view of *Mack*[16]

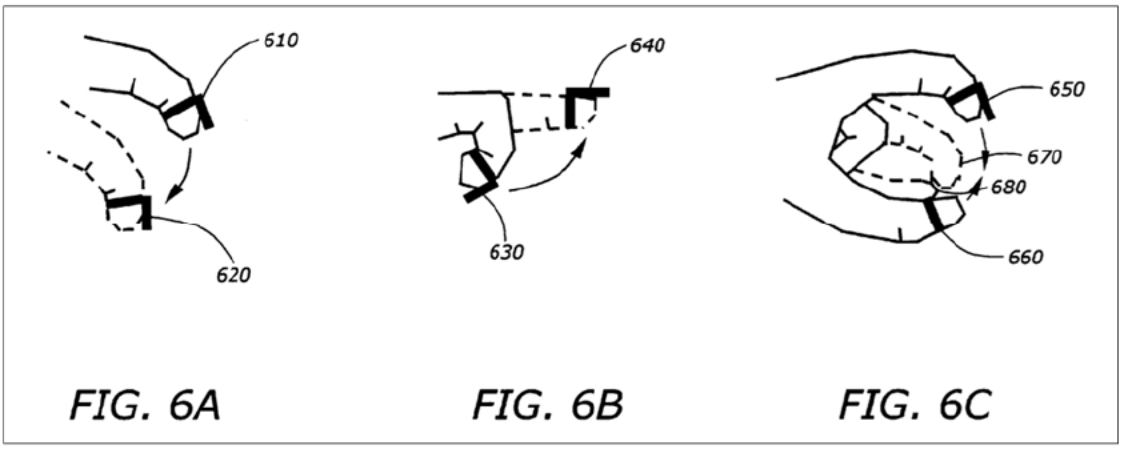
As explained below and in the attached declaration of Dr. Abowd (Ex. PA-DEC), *Sears* in combination with *Mack* discloses or suggests the limitations of claim 11 of the '949 patent. (Ex. PA-DEC, ¶ 118)

1. Overview of *Mack*

Mack discloses a system that uses two camera sensors to input data to a computer. (Ex. PA-12, Abstract.) Specifically, a user wears a marker on a hand, where the marker has at least one unique feature that stands out from other objects. (*Id.*) The movement of the marker is sensed by "**at least two sensors**" in a stereo imagining geometry to produce stereo images containing the marker. (*Id.* (emphasis added).) The stereo images are processed to produce marker images. (*Id.*)

[16] Although the Mack reference was cited in an application that is related to the '949 patent, the reference was never relied upon during prosecution of the '949 patent and presents a new, noncumulative teaching regarding claim 11. *See* MPEP § 2216. In any case, a substantial new question of patentability "affecting any claim" of the '949 patent has been raised in this request. *See id.*; *supra* Section V.A.

And the 3-D coordinates of the marker are computed from the marker images to provide input data to the computer. (*Id.*) The input pattern using finger motions "may correspond to specific command or may correspond to the exact 3-D movement that the user wants to navigate in the 3-D world." (*Id.*, 6:37-44.) As such, with the stereoscopic camera system disclosed in *Mack*, the user may control a computer with various hand gestures. (*Id.*, 6:37-59, FIG. 6A-C.)



(Ex. PA-12, FIG. 6A-C (illustrating various detected hand motions to input data to the computer).)

Mack is in the same or similar technical field as the '949 patent and *Sears*. (*Id.*, Abstract, FIGs. 6A-C; Ex. PAT-A, 15:21-38 (reciting "determin[ing] a gesture" based on electro-optical sensor output); Ex. PA-DEC, ¶ 52.) To the extent *Mack* is not in the field of endeavor of '949 patent (it is), *Mack* is reasonably pertinent to problems associated with controlling devices according to user gestures, problems with which the inventor was involved. (Ex. PA-12, Abstract, FIGs. 6A-C; Ex. PAT-A, 11:17-24; Ex. PA-DEC, ¶ 52.)

2. Claim 11

a. The method according to claim 8 wherein the electro-optical sensor includes first and second sensors in fixed relation relative to the digital camera.

To the extent that *Sears* is read not to disclose or suggest claim 11 (as discussed in Section V.A.12), *Sears* in view of *Mack* renders claim 11 obvious. (Ex. PA-DEC, ¶ 118.) Like *Sears*, *Mack* discloses a system that use a camera or sensor to determine gesture-based commands. (Ex. PA-12, 6:37-59; *see also* FIGs. 2, 6A-C; PA-1, 16:14-30; *supra* Section V.A.2.) *Mack* discloses with reference to Figure 2, a 3-D stereo camera system for inputting hand motion. (*Id.*, FIG. 2, 3:26-28.)

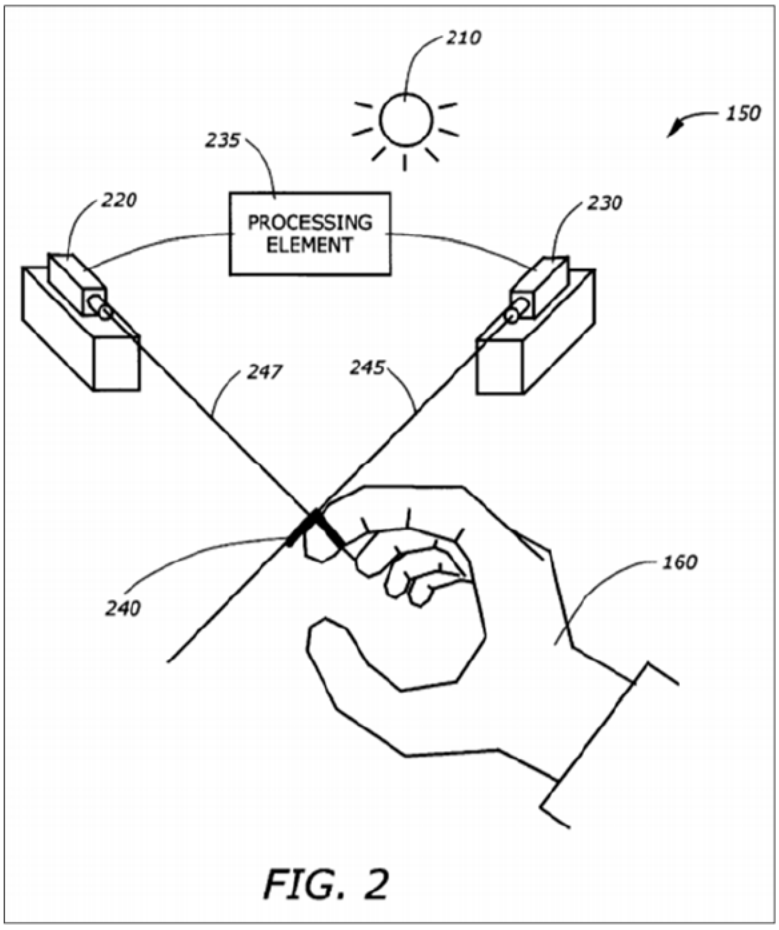
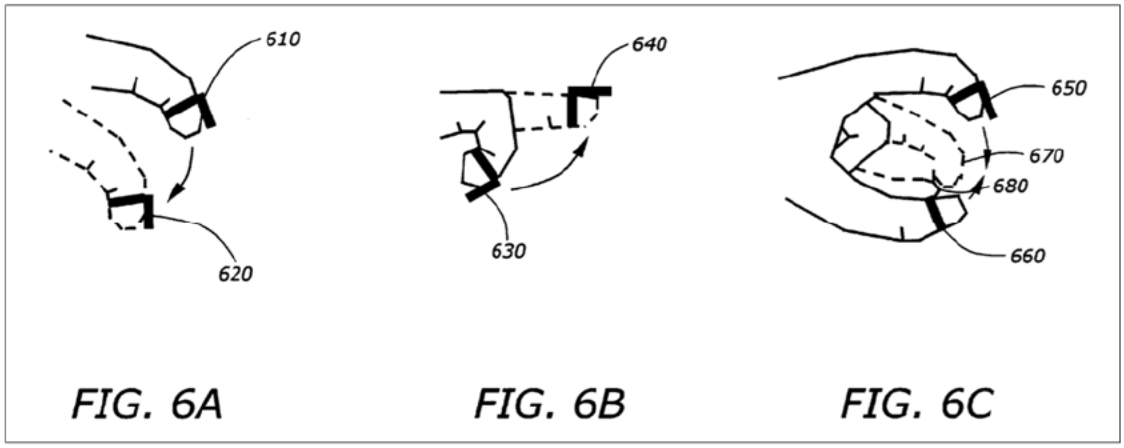


FIG. 2

(*Id.*, FIG. 2.) As shown in Figure 2, cameras 220 and 230 (an electro-optical sensor includes "first and second sensors") to observe the finger motions hand 160, and the stereo imaging geometry allows the computation of the 3-D coordinates of object 240. (*Id.*, 3:38-59; *see also id.*, Abstract ("two sensors . . . to produce stereo images"), 1:43-54 ("two sensors"), 3:15-17 ("one type of sensor . . . is the camera"), 5:18-26 (referring to cameras and related "image sensors" for capturing images).) *Mack* discloses that with this stereo configuration, the user can control the computer with various finger motions that are detected in three dimensions. (Ex. PA-12, 3:37-59, 6:37-59; FIG. 6A-C.)



(*Id.*, FIG. 6A-C.)

A POSITA when implementing *Sears* would have been motivated to look to *Mack*. In addition to detecting finger movements along the surface of the text, i.e., a 2-D motion, *Sears* discloses that the camera can detect tapping motions, i.e., 3-D motion, which involves detection of raising and lowering the fingers in and out of the direction of the camera. (Ex. PA-1, 9:26-40 (disclosing detection of "[t]apping motions by fingers 34," where "the apparent width of the finger 34 slightly increases as it is raised, and then decreases as it is lowered."), 10:50-53 ("Moving a single finger horizontally across a page reads the text in the line above the finger at a rate such that the vocalized texts keeps pace with the movement of the finger").) *Sears* discloses that such 3-D motion "can be readily detected by a variety of means." (*Id.*, 9:26-27.) As such, a POSITA when implementing *Sears* would have been motivated to look to other 3-D gesture detection systems, such as *Mack*.

Furthermore, a POSITA would have been motivated to modify *Sears* such that its gesture recognition hardware for sensing the gesture commands ("the electro-optical sensor") includes "first and second sensors" as claimed in view of *Mack*. (Ex. PA-DEC, ¶ 121.) *Mack* discloses that using two sensors to detect 3-D gestures as described therein would have provided a "simple and efficient" means to detect the 3-D gestures. (Ex. PA-12, 1:16-40; Ex. PA-DEC, ¶ 121.) Moreover, utilizing stereo sensors for gesture recognition, as taught by *Mack*, would have been a ready improvement to *Sears*'s 2-D gesture detection process. (Ex. PA-13, 11 ("[T]here is an inherent limitation in the discrimination capability by considering a 2D projection (or appearance) of a 3D hand when trying to capture a wide class of natural gestures. On the other hand, the use of 3D hand and gesture models offers the possibility of improving recognition . . . .").) Additionally, *Sears* discloses that "many different gestures may be linked with different commands within the

spirit of the present invention." (Ex. PA-1, 11:10-14.) Implementing the 3-D detection features, similar to as disclosed by *Mack*, would have improved 3-D gesture detection in a system, similar to as disclosed in *Sears*, to the user's benefit. (Ex. PA-12, 6:37-62; Ex. PA-DEC, ¶ 121.)

In combination, a POSITA would have understood that the modified *Sears* would include two sensors for gesture recognition and a high-resolution camera for text imaging. (Ex. PA-DEC, ¶ 122.) Two camera sensors would sense gestures as described by *Mack*, Ex. PA-12, FIGs. 2, 6A-6C; *see also* Ex. PA-1, 16:14-24 (explaining that a gesture camera has a wide-angle field of view), and the high-resolution, smaller field of view camera described by *Sears* would be suitable for imaging text, Ex. PA-1, 16:41-44 (explaining that camera 89 has a "pixel" density for recognizing text); *id.*, 17:14 (expressing that camera 89 has a "high-resolution"); *id.*, 16:30-33 (explaining that camera 89 has a smaller field of view for seeing text). Further, the two sensors would be in fixed relation to the digital camera for similar reasons as discussed above in Section V.A.5, such that, for example, the cameras are prevented from moving around in the housing of the portable device and getting damaged, taking unwanted images, etc. (*See* Section V.A.5.) *Mack* likewise provides a housing for the cameras/sensors. (Ex. PA-12, 2:58-60, 3:25-30, FIGs. 1-2).

A POSITA would have had a reasonable expectation of success when implementing the dual-camera/sensor system similar to as disclosed in *Mack*. Indeed, *Mack* discloses that its system is a "simple" system and implementation of the same "does not require major hardware modifications and can be implemented using commercially off-the-shelf hardware." (Ex. PA-12, 6:63-67.) Furthermore, the proposed modification would have combined known technologies (e.g., known camera hardware) according to known methods (e.g., using multiple sensors to detection 3-D motions/gestures) to yield the predictable result of an electro-optical sensing feature with a plurality of sensors in fixed relation relative to the digital camera. (Ex. PA-DEC, ¶ 123.) *See KSR Intern. Co. v. Teleflex Inc.*, 550 U.S. 398, 416 (2007). Accordingly, it would have been obvious to have the electro-optical sensor include first and second sensors in fixed relation relative to the digital camera as claimed. (Ex. PA-DEC, ¶ 123.)

Accordingly, *Sears* in view of *Mack* discloses or suggests this limitation under both the Requester's proposed constructions, and the plain meaning interpretations proposed by PO and found by the district court. (*See* Section IV; EX. CC-2.)

VI. Detailed Explanation of the Pertinence and Manner of Applying the Prior Art to the Claims

A. Bases for Proposed Rejections of the Claims

The following is a quotation of pre-AIA 35 U.S.C. § 102 that forms the basis for all of the identified prior art:

> A person shall be entitled to a patent unless...
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for patent, or
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States, or . . .
>
> (e) the invention was described in — (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for the purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language . . . .

The following is a quotation of pre-AIA 35 U.S.C. § 103(a) that forms the basis of all of the following obviousness rejections:

> A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negative by the manner in which the invention was made.

The question under 35 U.S.C. § 103 is whether the claimed invention would have been obvious to one of ordinary skill in the art at the time of the invention. In *KSR International Co. v. Teleflex Inc*., 550 U.S. 398 (2007), the Court mandated that an obviousness analysis allow for "common sense" and "ordinary creativity," while at the same time not requiring "precise teachings directed to the specific subject matter of the challenged claim[s]." *KSR Int'l Co.*, 550 U.S. at 418,

420-421. According to the Court, "[t]he combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results." *Id.,* 416. In particular, the Court emphasized "the need for caution in granting a patent based on the combination of elements found in the prior art." *Id.,* 401. The Court also stated that "when a patent simply arranges old elements with each performing the same function it had been known to perform and yields no more than one would expect from such an arrangement, the combination is obvious." *Id.,* 417.

The Office has provided further guidance regarding the application of *KSR* to obviousness questions before the Office.

> If a person of ordinary skill can implement a predictable variation, § 103 likely bars its patentability. For the same reason, if a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill.

MPEP § 2141(I) (quoting *KSR* at 417.)

The MPEP identifies many exemplary rationales from *KSR* that may support a conclusion of obviousness. Some examples that may apply to this reexamination include:

- Combining prior art elements according to known methods to yield predictable results;
- Simple substitution of one known element for another to obtain predictable results;
- Use of a known technique to improve similar devices in the same way;
- Applying a known technique to improve devices in the same way;
- Choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success ("obvious to try")

MPEP § 2141(III).

In addition, the Office has published *Post-KSR* Examination Guideline Updates. *See* Fed. Reg. Vol. 75, 53464 (the "Guideline Updates".) The Guideline Updates discuss developments after *KSR* and provide teaching points from recent Federal Circuit decisions on obviousness. Some examples are listed below:

> A claimed invention is likely to be obvious if it is a combination of known prior art elements that would reasonably have been expected to maintain their respective properties or functions after they have been combined.

Id., 53646.

> A combination of known elements would have been prima facie obvious if an ordinary skilled artisan would have recognized an apparent reason to combine those elements and would have known how to do so.

Id., 53648.

> Common sense may be used to support a legal conclusion of obviousness so long as it is explained with sufficient reasoning.

Id.

B. Proposed Rejections

Pursuant to 37 C.F.R. § 1.510(b)(2), Requester identifies claims 1-18 as the claims for which reexamination is requested. The proposed rejections below, in conjunction with the analysis in Sections IV-V above and the attached declaration of Dr. Abowd (Ex. PA-DEC), provide a detailed explanation of the pertinence and manner of applying the prior art to each of claims 1-18.

1. Proposed Rejection #1

Claims 1-18 are obvious over *Sears* in view of the knowledge of a POSITA under 35 U.S.C. § 103(a), as shown above in Section V.A and the declaration of Dr. Abowd provided in Exhibit PA-DEC.

2. Proposed Rejection #2

Claim 11 is obvious over *Sears* in view of *Mack* under 35 U.S.C. § 103(a), as shown above in Section V.B and the declaration of Dr. Abowd provided in Exhibit PA-DEC.

VII. Conclusion

For the reasons set forth above, the Requester has established at least one substantial new question of patentability with respect to claims 1-18 of the '949 patent. The analysis provided in this Request and in the declaration of Dr. Abowd (Ex. PA-DEC) demonstrates the invalidity of claims 1-18 in view of prior art that was not substantively considered by the Patent Office. Therefore, it is requested that this request for reexamination be granted and claims 1-18 be cancelled.

As identified in the attached Certificate of Service and in accordance with 37 C.F.R. §§ 1.33(c) and 1.510(b)(5), a copy of this Request has been served, in its entirety, to the address of the attorney of record.

Respectfully submitted,

PAUL HASTINGS LLP

Dated: November 11, 2021

By: /Joseph E. Palys/
Joseph E. Palys
Reg. No. 46,508